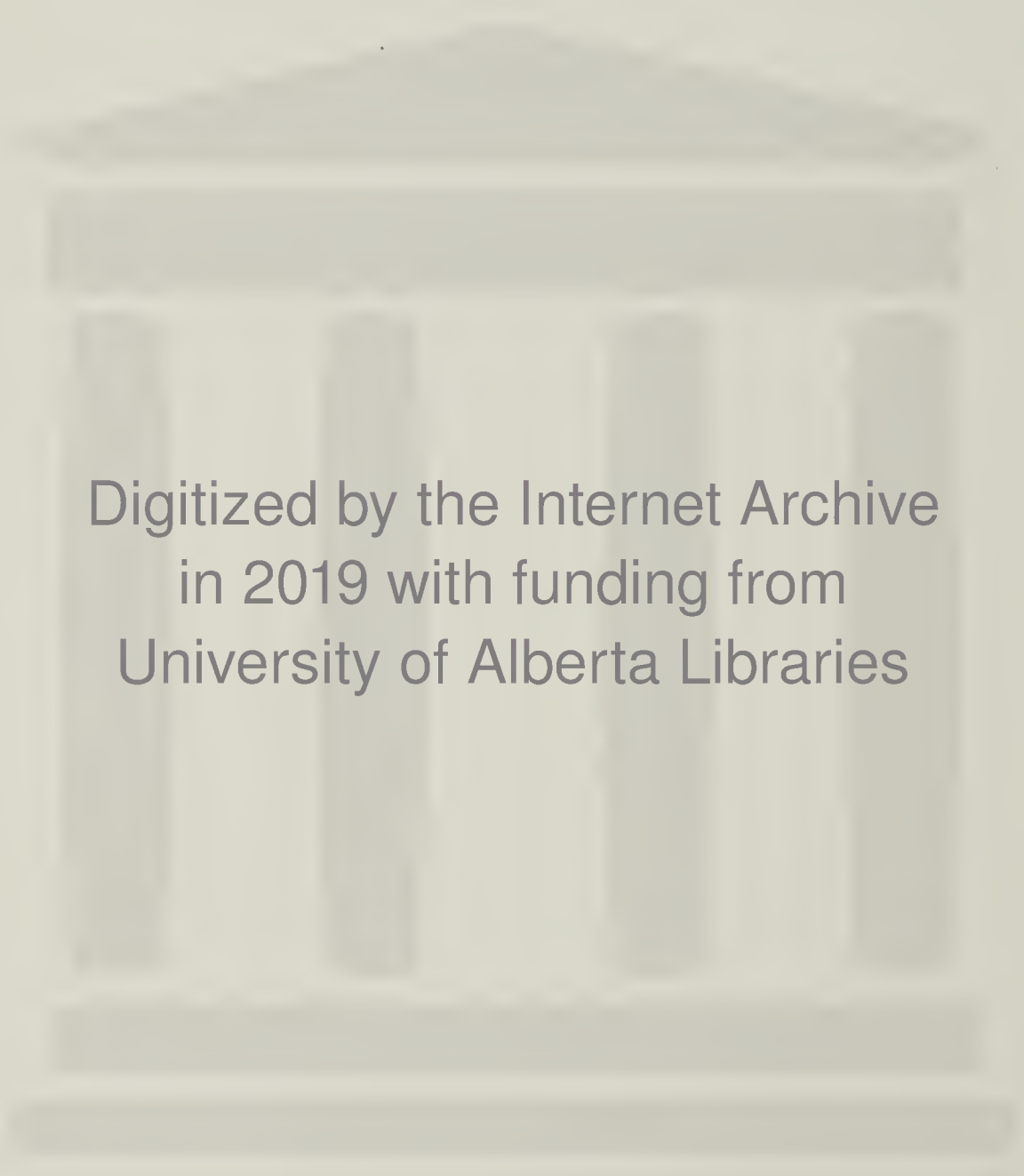


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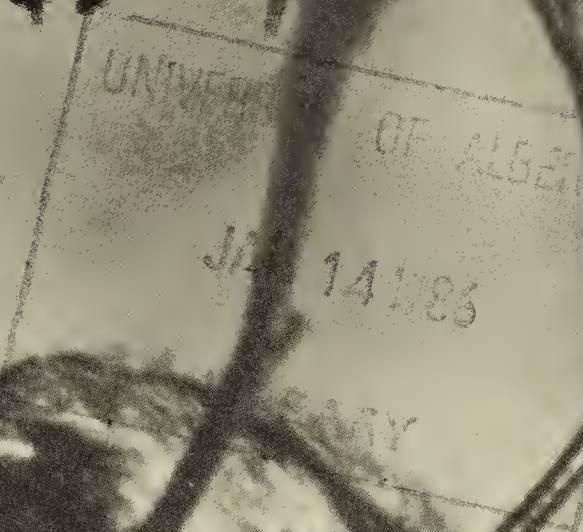
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BLUE JAY

December 1985

V. 43 #4



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COVER: Deer Mouse

Wayne Lynch

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HALLEY'S COMET COMETH

STAN SHADICK, Department of Physics, University of Saskatchewan, Saskatoon, Saskatchewan. S7N 0W0

For most people their once in a lifetime opportunity to view Halley's Comet will come this winter and spring. Very few persons can claim to have sighted this famous comet when it last appeared in 1910.

Halley's Comet is believed to be a solid nucleus of dust and ice only about 7 km in size. Unlike the circular orbits of the planets, comets move in very elliptical orbits. Halley's Comet spends most of its time out beyond the orbit of Jupiter. Once every 76 years it hurtles around the sun inside the orbit of the earth. At that time the solar radiation vaporises part of the nucleus, producing tails of gas and dust.

Astronomers have traced historical references of Halley's Comet back to 240 B.C. A few of its appearances have coincided with military defeats such as the destruction of Jerusalem in 66, the defeat of Attila the Hun in 451 and the Battle of Hastings in 1066. Such events have caused some people to view comets as ill omens.

During its last appearance in 1910, astronomers predicted that the earth would pass through the tail of the comet. This news caused some sensationalist newspaper reporters to predict that the atmosphere would become polluted with cyanogen. Swindlers had a field day in some areas selling comet pills and bottled oxygen. Although the comet put on a brilliant display, there was no evidence of pollution.

For its upcoming appearance, Comet Halley will pass closest to the sun on February 9, 1986. Unfortunately the long tail will not be visible then as the comet will be on the opposite side of the sun as seen from earth. In fact the geometry of the or-

bit will likely produce one of the poorest shows on record -- especially for Canadian observers.

Nevertheless there will be times when Halley's Comet will be visible to the naked eye. It will be necessary to leave the background light pollution of our cities and towns and journey into some dark rural location. For the best view, be sure to take a pair of binoculars and choose a night when there is no moon.

The actual brightness of a comet can be very difficult to predict, as was evidenced by the infamous Comet Kohoutek. However astronomers now predict that Comet Halley should become visible as a faint, fuzzy, starlike image during December and January. The best time to look for the comet will be between 7:00 p.m. and 8:00 p.m. from 30 December until about 20 January. After that date the comet will be quickly approaching the sun and will become lost in the twilight.

The area in the sky in which to look for Halley's Comet is shown in Fig. 1. The chart shows the southwestern night sky at 7:00 p.m. on 30 December. Although it is drawn for an observer near Saskatoon, it can be used by any one located between latitudes 40° and 60° (i.e. most of Canada). Letters locate the positions of some reference stars as well as the planet Jupiter.

Throughout late December and January, Halley's Comet will be found within the faint constellation Aquarius. To locate the comet on 30 December use the following procedure:

- 1) Locate the relatively bright star Markab

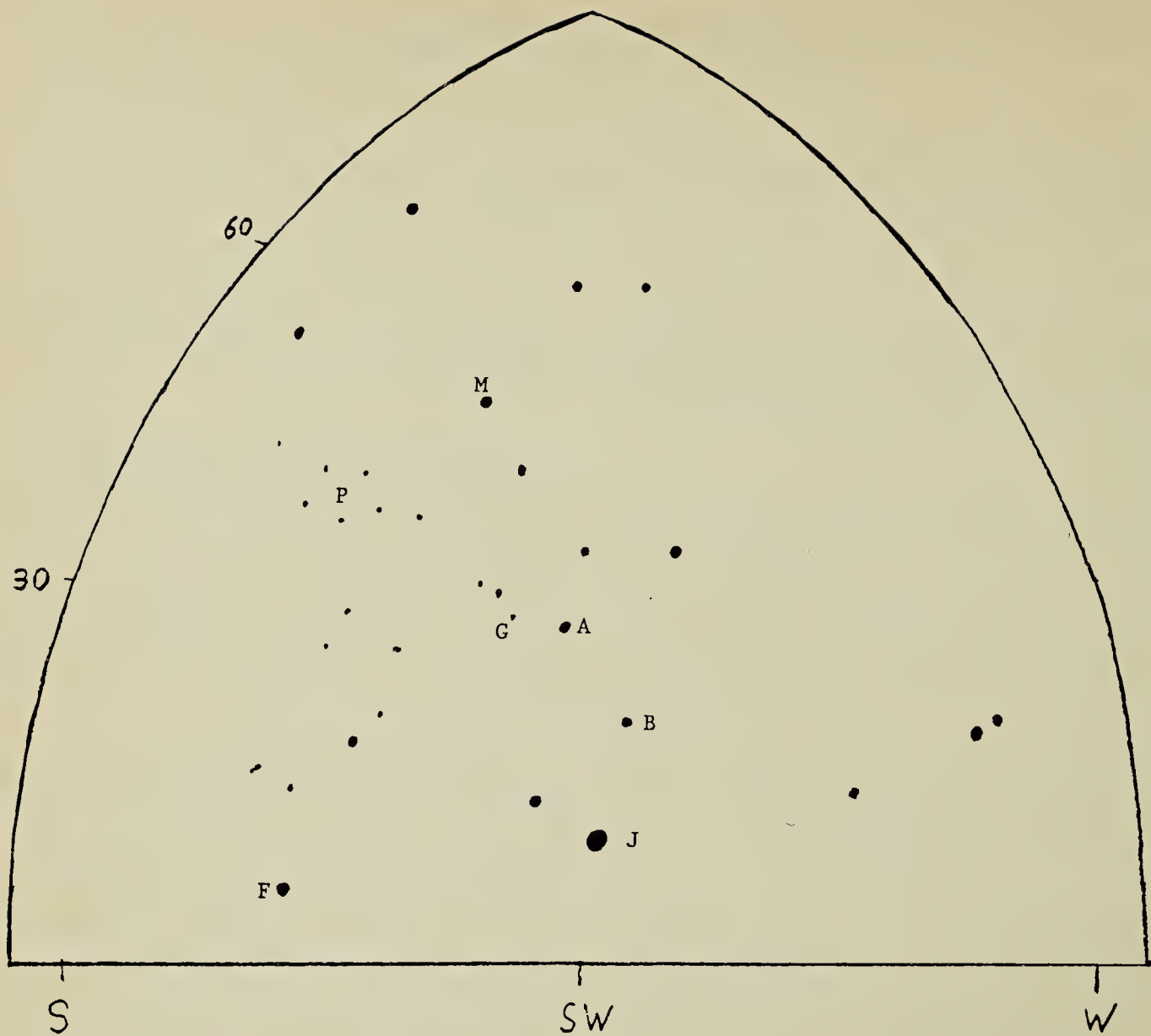


Figure 1. Saskatchewan night sky at 7 p.m. on 30 December 1985. Reference stars shown are: A - Alpha aquarius; B - Beta Aquarius; F - Formalhaut; G - Gamma Aquarius; J - Planet Jupiter; M - Markab; P - Pentagon of stars in Pisces. Comet Halley appears near: P 12-15 December; G 30 December; A 4 January; B 22 January.

(labelled M) which is at the bottom corner of the Great Square in the constellation Pegasus

- 2) Locate the extremely bright planet Jupiter (labelled J) which is very low in the southwest
- 3) Approximately halfway between Markab and Jupiter you should find the star Alpha Aquarius (labelled A). It should appear almost as bright as Markab
- 4) A short distance to the left of Alpha Aquarius, locate a fainter star Gamma Aquarius (labelled G)

- 5) By scanning the sky with binoculars near Gamma Aquarius you should see Halley's Comet as a fuzzy object probably fainter than the star Gamma Aquarius. Be careful not to confuse it with the two other stars shown in the figure above Gamma Aquarius.

From night to night in early January, the comet should become slightly brighter but also move lower in the sky. By 20 January it should approach the vicinity of the star Beta Aquarius (labelled B).

It is possible that Halley's Comet may be visible earlier in December although it

won't appear as bright. From 12-15 December try scanning with binoculars inside the pentagon of five stars (labelled P) to the lower left of the Great Square of Pegasus.

As the comet approaches the sun in February it will be too close to the sun to be seen. In March it should display an impressive tail for observers south of the southern United States. Here in Canada the tail will not appear as bright because it will be very close to the horizon.

To look for the comet's tail in March you will need to be south of the city and watch the southeastern horizon between 90 and 120 min. before sunrise. To avoid problems with moonlight the best dates would be between 10 and 22 March. The exact time of sunrise varies depending upon the

observer's location. But as a general rule the best time will be from 5:00 to 6:00 a.m. You should see the comet rise tail first, slanting up and to the right from a point on the horizon slightly to the north of southeast. Binoculars may help for a detailed view.

The comet will reappear late in the evening of 18 April low in the southern sky. However moonlight may make it difficult to find. Your last chance to avoid problems with moonlight and spot the comet will be about 11:00 p.m. on the last three days in April. Try looking about 15° above the horizon in a SSW direction.

Readers interested in more information about Halley's Comet should consult articles in recent issues of the following magazines: *Nature Canada* (Oct/Dec 1982), *Equinox* (Mar 1985), *Sky and Telescope*, and *Astronomy*.



A winter scene

Unknown

THE FLOWERING RUSH ON THE ASSINIBOINE RIVER

A NEW LOCALITY IN MANITOBA

LEONARD J. HUTCHISON, Department of Botany, University of Toronto, Toronto, Ontario. M5S 1A1

The Flowering Rush (*Butomus umbellatus*) (Fig. 1) arrived in eastern North America from Europe and Asia at the end of the 19th century and has quickly spread throughout the St. Lawrence-Great Lakes water system. This species was not known to occur in Manitoba until recently and was not included in the recent floras of the region^{1 2} However, it has recently been reported from three localities in Manitoba: Netley Marsh, Patricia Beach and St. Andrews on the Red (Fig. 2 and Table 1).³ It was suggested that due to the ecology of the Flowering Rush (aggressiveness and efficient dispersal mechanisms) it would eventually become widely established in freshwater marshes and river edges throughout the prairies of western Canada.

During the summers of 1980 and 1981 collections were made of Flowering Rush from colonies which had established themselves along the shallow shores of the Assiniboine River, 10 km upstream from the

forks of the Red and Assiniboine Rivers in Winnipeg (Fig. 2 and Table 1). These colonies upstream from the previously reported sites seemed to be well established and represent a new locality in the province. The Flowering Rush is probably more common in southern Manitoba than we realise, but has gone unnoticed or unrecognised by individuals. Since the plant has attractive flowers and is easy to spot because of its size, it will undoubtedly become more familiar to Manitobans as it extends its range in the province.

¹ LOOMAN, J. and K.F. BEST 1979 Budd's flora of the Canadian Prairie Provinces. Agriculture Canada Publ. 1662, Ottawa.
² SCOGGAN, H.J. 1957 Flora of Manitoba. National Museum of Canada Bull. No. 140, Ottawa.
³ STANIFORTH, R.J. and K.A. FREGO 1980 Flowering Rush (*Butomus umbellatus*) in the Canadian Prairies. Can. Field-Nat. 94:333-336.

Table 1. COLLECTIONS OF FLOWERING RUSH (*Butomus umbellatus*) IN MANITOBA HERBARIA.

Location	Collector and Date	Herbarium Specimens*
1) Netley Marsh	M. Hoefs, Sept. 1967	WIN 15071
	M. Hoefs, Sept. 1967	WIN 15072
	J.R.B. Brown, 13 August 1967	WIN 4441
	D. Punter, August 1972	WIN 26142
	G.M. Keleher, 8 October 1975	WIN 30293
	S. Anderson, 3 September 1979	MMMN 012143
2) Patricia Beach	S. Anderson, 8 August 1982	MMMN 013489
	R.J. Staniforth, 15 June 1977	UWPG 0125A
3) St. Andrews on the Red	R.J. Staniforth, 18 July 1977	UWPG 0125
4) Assiniboine River, Winnipeg	L.J. Hutchison, 19 August 1980	LH 91
	L.J. Hutchison, 26 August 1981	WIN 37474

* WIN = Herbarium of the University of Manitoba; MMMN = Herbarium of the Manitoba Museum of Man and Nature; UWPG = Herbarium of the University of Winnipeg; LH = Herbarium of Leonard Hutchison.



Figure 1. *Flowering Rush colony growing along Assiniboine River, Winnipeg.* L. Hutchison

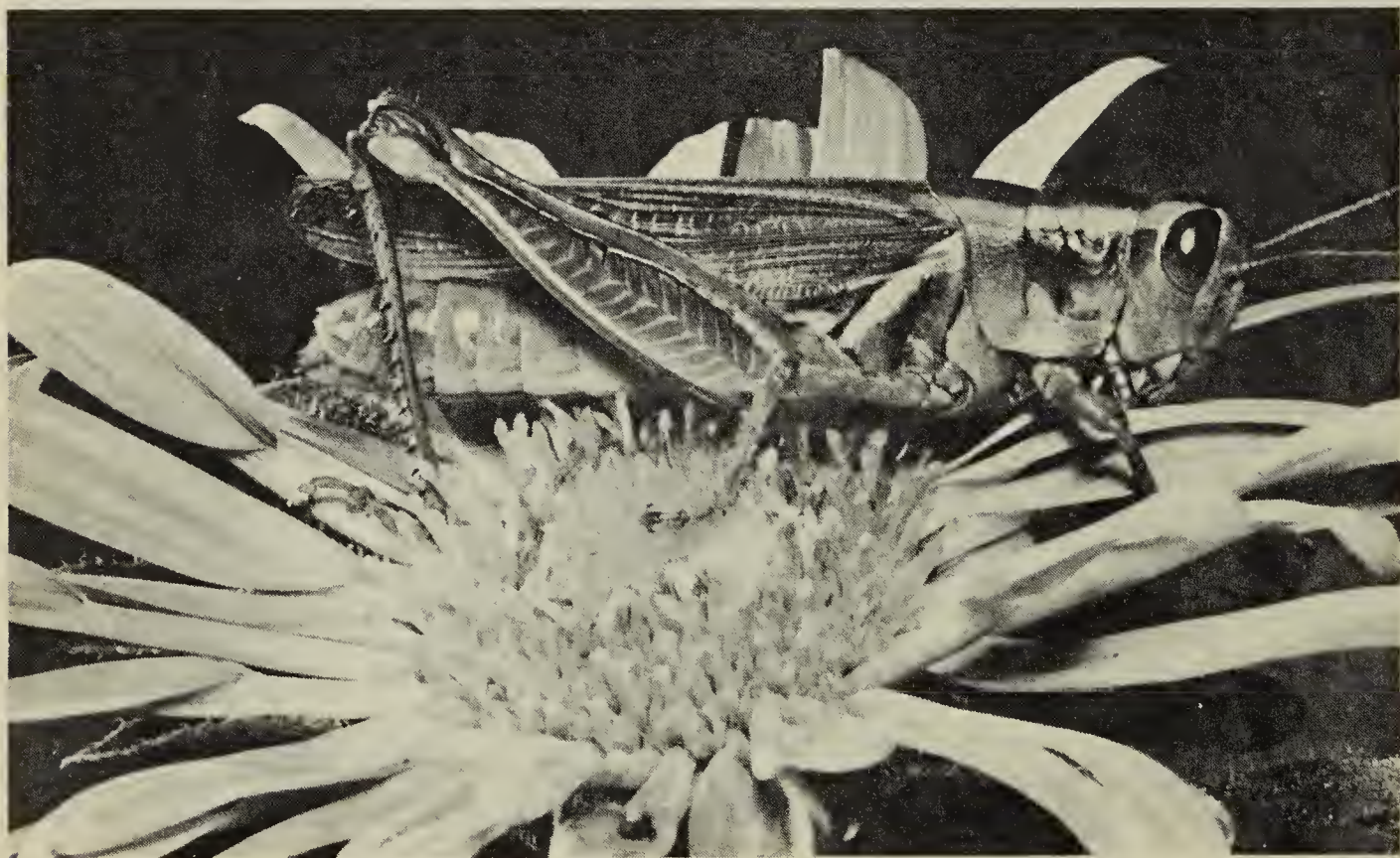
SPECIES DISTRIBUTION OF ROADSIDE GRASSHOPPERS IN SOUTHERN SASKATCHEWAN

MICHAEL J. BIDOCHKA, Bioinsecticide Laboratory, Department of Applied Microbiology and Food Science, University of Saskatchewan, Saskatoon, Saskatchewan. S7N 0W0

In the summer of 1985 grasshopper densities in southern Saskatchewan reached heights not previously recorded on agricultural land since 1935. The Estevan and Weyburn areas reported grasshopper nymph densities of approximately 500 individuals per square meter. The repercussions of such an outbreak were immediately felt by the farming community in southern Saskatchewan where some wheat farmers lost whole fields of wheat in the early stages of growth. Monetary losses due to the grasshopper infestation were in the order of 100 million dollars. The grasshopper pesticide, Malathion, had to be flown in from eastern U.S. cities by the R.A.F. since pesticide demand was greater than supply to suppress the grasshopper plague.

The grasshopper outbreaks of the 1930's in southern Saskatchewan were dominated by one particular species, the Migratory Grasshopper, *Melanoplus sanguinipes* and this species continues to be the single most devastating insect pest of the Canadian prairies.¹ Riegert also reported local infestations of the Clear-winged Grasshopper *Camnula pellucida*. Packard's Grasshopper, *M. packardii*, and the Two-striped Grasshopper, *M. bivittatus*, were of secondary importance, particularly in the southern regions.

On 15 June 1985 grasshoppers were sampled approximately 15 km southeast of Regina in an area predominated by wheat farming. Grasshoppers were collected by



Migratory Grasshopper

Hans Dommasch

Table 1. SPECIES DISTRIBUTION, SEX RATIO AND TOTAL NUMBER OF NYMPHS FROM A ROADSIDE SAMPLE OF GRASSHOPPERS NEAR REGINA, SASKATCHEWAN

Species	Total # Adults	% of Total Catch	Male/female Ratio	Total # Nymphs
Melanoplus sanguinipes	686	51.89	1.95	101
M. packardii	213	16.11	3.63	34
Camnula pellucida	202	15.28	1.43	45
M. bivittatus	180	13.62	2.05	41
Aeropedellus clavatus	17	1.29	1.83	6
M. femurrubrum	10	0.75	0.43	0
M. infantilis	7	0.53	1.33	0
M. foedus	3	0.22	-	0
M. confusus	3	0.22	-	0
M. angustipennis	1	0.07	-	0

extending a net from the car 25 cm from the ground and driving 30 kmph along the roadside. A total of 1322 individual adult grasshoppers were collected, frozen, identified to species and sexed. Nymphal grasshoppers were also identified to species.

Table 1 presents data from the 10 species collected. Over 50% of the total adult catch was the Migratory Grasshopper. This species, along with all members of the genus *Melanoplus* belongs to a classification known as spur-throated grasshoppers. If you pick up a grasshopper, turn it on its back and find a short, stubby spur between the front legs, it is probably a *Melanoplus*. The common species, the Migratory Grasshopper, is brownish-yellow and approximately 23-28 mm long. Their hind legs have a series of black bands and their tibia may be red or blue; red are predominant around the Yorkton area, blue are predominant in the southern areas of the province. Some species are difficult to key and positive identification relies on the size and shape of the terminal abdominal structures such as the cerci, subgenital and supraanal plate.

Packard's Grasshopper, the Clear-winged Grasshopper and the Two-striped Grasshopper were of secondary importance with a total combined catch of approximately 45%. The roadside habitat also supported

such non-economic species as *M. infantilis*, *M. foedus*, *M. confusus*, *M. femurrubrum* and the Club-horned Grasshopper, *Aeropedellus clavatus*.

In the economically important species, more males were caught than females. This figure may not represent a naturally occurring disproportionate sex ratio, but rather it may represent sexual differences in mobility (i.e jumping into the net when startled by the oncoming vehicle). Mobility differences may be a reflection of sexual differences in size (Table 2). Females were from 1.16 times larger in weight (*M. sanguinipes*) to 1.8 times larger than males (*C. pellucida*). Overall, the largest species was the Two-striped Grasshopper with females being 1.6 times larger in weight than males. Females, being generally larger, may not jump as quickly when startled or, may tend to hug the ground instead of jumping. Females have pointed abdominal ends used for egg laying and thus can be distinguished from males.

Grasshopper species composition and densities may be different between roadside and field conditions since most economic species tend to bask in the sun along roadside stubble.¹ In any case, these data give valuable information on economic species distribution in a wheat-growing area of southern Saskatchewan.

Table 2. WEIGHT OF ECONOMICALLY IMPORTANT MALE AND FEMALE GRASSHOPPERS

Species	N*	Males		Females	
		Weight (mg)	S.D.*	Weight (mg)	S.D.*
M. sanguinipes	20	289.62	46.11	336.95	81.72
M. bivittatus	20	496.74	105.19	792.85	221.84
M. packardii	20	434.011	85.08	590.19	178.85
C. pellucida	20	178.733	29.89	325.30	122.60

* N sample size number; S.D. standard deviation

¹ RIEGERT, P.W. 1968 A history of grasshopper abundance surveys and forecasts of outbreaks in Saskatchewan. Memoirs of the Entomological Society of Canada No. 52



Band-winged grasshopper

R.E. Gehlert

SKIPPERS AND BUTTERFLIES OF THE POLICE COULEE AREA, ALBERTA

HAROLD W. PINEL, 1017 - 19 Avenue N.W., Calgary, Alberta T2M 0Z8 and NORBERT G. KONDLA, Resource Evaluation and Planning Division, Alberta Energy and Natural Resources, 530 - 8 Street S., Lethbridge, Alberta. T1J 2J8

The study area of 36 mi.² is Township 1, Range 13, west of the Fourth Meridian. The Alberta - Montana boundary forms the southern border of the study area. The northern end of the study area is bordered by special features such as the Milk River, Writing-on-Stone Provincial Park and Van Cleeve Coulee. Bisecting the study area is the north-south running Police Creek and its spectacular associated coulee system. Rising from the plains are the scenic Sweetgrass Hills of Montana, immediately south of the study area. Elevation ranges from 3140 to 4000 ft.

Two ecoregions make up the study area. The northern two-thirds of the land is classified as being in the Short Grass Ecoregion, and the southern third as in the Mixed Grass Ecoregion.⁹ This boundary is based primarily on the soil boundary separating the Brown and Dark Brown Chernozems. Visually, the boundary is noticeable by the higher elevation and more luxuriant grass vegetation of the Mixed Grass Ecoregion. The area has a continental prairie climate characterised by cold winters, warm summers, and low precipitation. The mean annual precipitation is 21 cm and sometimes as low as 17 cm in the Short Grass region, while the Mixed Grass Ecoregion has a mean of 26 cm and a low of 20 cm. The increased precipitation is due to the increased elevation which increases upslope precipitation during an easterly flow.

A diverse landscape and an associated variety of microenvironments are largely responsible for the heterogeneity of the vegetation. The degree and stability of slope, exposure to wind and sun, availability

of moisture, and soil type are key factors influencing plant growth on a given site. The change from one plant community to another can be abrupt and well defined, or it may be gradual and intergrading. Figures 1 to 3 illustrate the topography and habitats of the study area.

For discussing the butterflies, it is convenient to group the habitats into four major categories: grasslands, bare and eroding slopes, shrub communities and riverine forest.

The majority of the study area is featured by an undulating upland plain, which becomes more rolling to the south as it merges into the lower slopes of the Sweetgrass Hills. Much of the upland plain has been disturbed by cultivation and cattle grazing. Mixed grassland occurs on the upland plain, on older portions of the floodplain, and on relatively stable coulee and valley slopes. Spear grasses (*Stipa* spp.), Blue Grama Grass (*Bouteloua gracilis*), June Grass (*Koeleria cristata*) and wheat grasses (*Agropyron* spp.) are the dominant grasses. In the more xeric sites, Blue Grama Grass and Spear Grass (*Stipa comata*) are predominant. In mesic areas, other species of spear grasses and wheat grasses dominate.

On dry exposed coulee edges, slopes and sandstone ledges, the following species are common: Creeping Juniper (*Juniperus horizontalis*), Moss Phlox (*Phlox hoodii*), Musineon (*Musineon divaricatum*), Cryptanthus (*Cryptantha nubigena*), Smooth Blue Beard-tongue (*Penstemon nitidus*), Butte Marigold (*Hymenoxys acaulis*), Chamaerhodos (*Chamaerhodos erecta*),



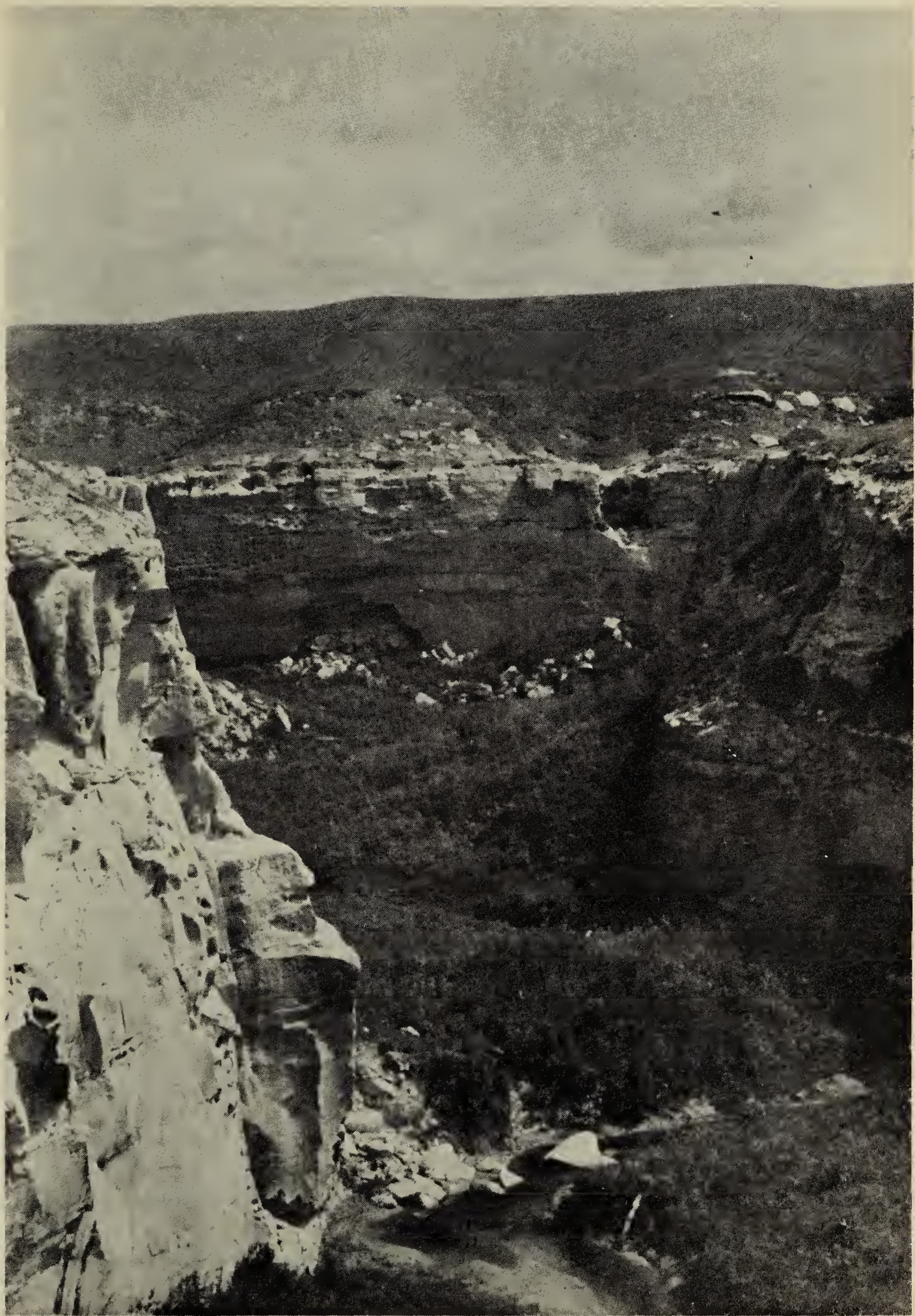
Figure 1. Aerial photo of study area (1:60,000)

bladder pods (*Lesquerella* spp.), Yellow Prairie Violet (*Viola nuttallii*) and Prairie Groundsel (*Senecio canus*).

Shrub communities can be found in the river valley, in the coulee bottoms, and on protected slopes. In this area, they are highly variable and include willows (*Salix* spp.), Water Birch (*Betula occidentalis*), Golden Currant (*Ribes aureum*), Skunk Bush (*Rhus trilobata*), Thorny Buffalo-berry (*Shepherdia argentea*), Chokecherry (*Prunus virginiana*), Wild Gooseberry (*Ribes oxycanthoides*), roses (*Rosa* spp.), Wolf

Willow (*Elaeagnus commutata*) and Buckbrush (*Symphoricarpos occidentalis*). Shrub stands may be of a single species or a mixture of species.

The riverine forest dominated by cottonwoods (*Populus sargentii*) occurs in scattered stands along the Milk River, and in the major coulees. The main shrubs associated with the riverine forest are willows, Water Birch, Chokecherry, Thorny Buffalo-berry and Red Osier Dogwood (*Cornus stolonifera*).



Police Coulee

H.W. Pinel

Annotated List

The following list is the result of field observations and collections made by the authors on 17 different days over a five-year period from 1980 to 1984. Dates indicating days for which specimen records are available are written in an abbreviated format by day, month, year (e.g. 26/6/83 is 26 June 1983). These are given only for the less common species. Included is data collected by Wayne Smith, Felix Sperling and Terry Thormin. These records are acknowledged by their initials following the collection date for those species for which dates are given. For the more common species the flight period is noted by the first and last dates recorded with specimens

Most of the common names in the list are from Pyle.⁷ Scientific names generally follow Howe for genus, and Miller and Brown for species and subspecies.^{2 5}

HESPERIIDAE - Skippers

Silver-spotted Skipper (*Epargyreus clarus*) - Common in shrubbery in coulees and along the river from 10 June to 22 July.

Northern Cloudywing (*Thorybes pylades*) - Occasional on prairie slopes 10 to 26 June.

Afranius Dusky Wing (*Erynnis afranius*) - Fairly common in grasslands during the last half of May and in late July.

Common Checkered Skipper (*Pyrgus communis communis*) - Uncommon in dry grasslands: 23/8/76 WS, 7/8/80, 15/7/83.

Garita Skipperling (*Oarisma garita*) - Fairly common in moist grasslands from 10 June to 9 July.

Uncas Skipper (*Hesperia uncas*) - Occasional on dry grassy slopes: 22/6/80, 10/7/80.

Assiniboia Skipper (*Hesperia comma assiniboia*) - Occasional in grasslands: 7/8/80.

Yellowpatch Skipper (*Polites coras*) - Occasional in disturbed grasslands: 15/7/83. To date, this is the most southeastern record for Alberta

Tawny-edged Skipper (*Polites themistocles*) - Scarce in grasslands in the coulees: 26/6/83. Outside of the Cypress Hills, this is the most southeastern record for Alberta.

Long Dash (*Polites mystic dacotah*) - Uncommon in disturbed grasslands from 22 June to 27 July.

Delaware Skipper (*Atrytone logan*) - Occasional in low shrubbery in coulees during July. These are the westernmost known records for Alberta.

Roadside Skipper (*Amblyscirtes vialis*) - Occasional near shrubbery in coulees: 10/6/80 TT.

PAPILIONIDAE - Swallowtails

Old World Swallowtail (*Papilio machaon dodi*) - Occasional in grasslands during May and July.

Anise Swallowtail (*Papilio zelicaon*) - Scarce in grasslands: 27/5/79 FS. There is a chance that this record is actually a hybrid with the Old World Swallowtail. It has a round, unconnected anal pupil, but a fair amount of yellow on the claspers (F. Sperling, pers. comm)

Tiger Swallowtail (*Papilio glaucus canadensis*) - Scarce in tall thickets in coulees: 26/6/83.

Two-tailed Tiger Swallowtail (*Papilio multicaudata*) - Fairly common in shrubbery in coulees from 10 June to 22 July.

PIERIDAE - Whites, Sulphurs and Marbles

Western White (*Pieris occidentalis*) - Fairly common in grasslands and along the



Tiger Swallowtails

Larry Morgotch

- edges of coulees from 16 May to 8 August.

Cabbage White (*Pieris rapae*) - Common in disturbed areas from 28 May to 7 August.

Creamy Marblewing (*Euchloe ausonides*) - Scarce in higher elevation grasslands in June: 10 + 22/6/80.

Olympia Marblewing (*Euchloe olympia*) - Occasional during the latter half of May on bare slopes in the coulees: 28/5/81, 16/5/82.

Common Sulphur (*Colias philodice eriphyle*) - Common in disturbed areas from 6 May to 8 August.

Queen Alexandra's Sulphur (*Colias alexandra alexandra*) - Uncommon in native grasslands: 10/6/80, 7/8/80, 28/5/81.

LYCAENIDAE - Gossamer-winged Butterflies

Ruddy Copper (*Lycaena rubidus*) - Scarce; one individual was collected on 11/7/80 in a shady area in Van Cleeve Coulee.

Purplish Copper (*Lycaena helloides*) - Uncommon along the Milk River and other water courses: 10/6/80, 27/6/83.

Coral Hairstreak (*Harkenclenus titus immaculosus*) - Uncommon in shrub communities in the coulees during July. These are the southeasternmost records for Alberta, excluding those for the Cypress Hills.

Acadian Hairstreak (*Satyrium acadica*) - Scarce; an individual was collected in shrubbery along Police Creek 23/7/76 WS.

Striped Hairstreak (*Satyrium liparops*) - Scarce; an individual was recorded 22/7/76 WS in low shrubbery in Police Coulee. This is the southernmost known record for Alberta.

Gray Hairstreak (*Strymon melinus*) - Occasional in mixed grasslands on the coulee hillsides during May and July: 22/7/76 WS, 16/5/82.

Western Tailed Blue (*Everes amyntula albrighti*) - Occasional in shrub communities in coulees and river valleys: 10/6/80, 26/6/83. Outside of the Cypress Hills, these are some of the most southeastern reports for the province along with those reported for the lower Milk River.⁴

Spring Azure (*Celastrina ladon*) - Occasional in wooded areas of the coulees and river valley during May: 6/5/76 WS, 16/5/82.

Silvery Blue (*Glaucopsyche lygdamus*) - Occasional in mixed grasslands: 22/6/80, 16/5/82.

Melissa Blue (*Lycaeides melissa melissa*) - Common in grasslands from 28 May to 7 August.

Greenish Blue (*Plebejus saepiolus amica*) - Uncommon in disturbed grasslands: 10/6/80, 15/7/83.

Pembina Blue (*Plebejus icarioides pembina*) - Uncommon in mixed grasslands in the southern parts of the coulees closest to the Sweetgrass Hills of Montana from 10 June to 15 July. These records, along with those from the Cypress Hills are the southeasternmost in Alberta.

Shasta Blue (*Plebejus shasta minnehaha*) - Uncommon and local on bare coulee slopes from 10 June to 9 July: 10/6/80, 9/7/80, 26/6/83.

Acmon Blue (*Plebejus acmon lutzii*) - Uncommon in dry grasslands and on bare coulee slopes: 26/6/83, 21/7/84.

Rustic Arctic Blue (*Plebejus franklinii rustica*) - Occasional in grasslands: 26/6/83. This is one of the most southeastern records for the province.

NYMPHALIDAE - Brush-footed Butterflies

Variegated Fritillary (*Euptoieta claudia*) - Scarce in riverine forest; one 11/7/81.

Great Spangled Fritillary (*Speyeria cybele leto*) - Fairly common in shrub communities in coulees during July.

Aphrodite (*Speyeria aphrodite*) - Common in mixed grasslands and shrub communities in the coulees during July and August. The specimens are not like ssp. *manitoba* from farther north. Generally they are larger and darker indicating transition to ssp. *ethne*.

Edward's Fritillary (*Speyeria edwardsii*) - Occasional in shrub communities in coulees from 10 June to 7 August: 10/6/80 TT, 9/7/80, 7/8/80.

Zerene Fritillary (*Speyeria zerene*) - Scarce in shrub communities in the coulees: 7/8/80.

Callippe Fritillary (*Speyeria callippe calgariana*) - Fairly common in mixed grasslands and shrub communities on coulee hillsides from 22 June to 29 July. Males spend a lot of time patrolling upper coulee edges.

Mormon Fritillary (*Speyeria mormonia eurynome*) - Scarce in shrub communities in coulees: 23/7/76 WS, 22/6/80.

Silver-bordered Fritillary (*Boloria selene*) - Occasional in low damp areas in the southern parts of the coulee systems during June: 10^{\$}22/6/80. These are the southeasternmost records for Alberta.

Sagebrush Checkerspot (*Chlosyne acastus*) - Uncommon on hillsides of the coulees and river valley during July: 21-23/7/76

WS, 10/7/80. These are the westernmost records along the Milk River drainage, and the southwesternmost records for the province.

Pearl Crescentspot (*Phyciodes tharos*) - Common in grasslands and bordering shrub communities in the coulees from 28 May to 8 August.

Northern Crescentspot (*Phyciodes pascoensis*) - Scarce in the extreme southern portions of the coulees on the lower slopes of the Sweetgrass Hills. An individual was collected on 22/6/80.

Tawny Crescentspot (*Phyciodes batesii*) - Uncommon in shrub communities in coulees from 10 June to 11 July: 10/6/80, 9-11/7/80. To date these are the most western records of this species along the Milk River drainage.

Anicia Checkerspot (*Euphydryas anicia*) - Scarce; two females were collected by Kondla and Thormin along Police Creek 10/6/80. Outside of the Cypress Hills this is the most southeasterly record for the province. These were probably wind-blown strays from the Sweetgrass Hills populations.

Satyr Anglewing (*Polygonia satyrus*) - Scarce in poplar woods and shrub communities in coulees and river valley; recorded only during July: 22/7/76 WS, 10/7/80. Outside of the Cypress Hills, these are the southeasternmost records for Alberta.

Gray Comma (*Polygonia progne*) - Only one record of an individual 22/7/76 WS in a shrub community in Police Coulee. This is one of the most southeasterly records for the province outside of the Cypress Hills.

Compton Tortoiseshell (*Nymphalis vaualbum*) - Uncommon in shrub communities in coulees: 6/5/76 WS. These are the southeasternmost reports for the province.



Mourning Cloak

R.E. Gehlert

Mourning Cloak (*Nymphalis antiopa*) - Fairly common in May, occasional during rest of the flight period in poplar woods and shrub communities in the coulees and river valley: 6/5/76 WS, 6/7/76 WS, 20/7/84.

Milbert's Tortoiseshell (*Nymphalis milberti*) - Uncommon in poplar woods and shrub communities in the coulees and river valley: 10/6/80, 27/6/83, 15/7/83.

Painted Lady (*Vanessa cardui*) - Common in 1983 commencing in late June in all habitats: 26-27/6/83, 15/7/83.

Red Admiral (*Vanessa atalanta*) - Scarce in disturbed areas in coulees: 28/5/81.

White Admiral (*Limenitis arthemis rubrofasciata*) - Occasional in poplar woods in river valley and in shrubbery in coulees: 22/7/76 WS, 10/6/80 TT. These are the most southeasterly records for Alberta outside of the Cypress Hills.

Weidemeyer's X White Admiral (*Limenitis weidemeyerii* x *L. arthemis*) - Uncommon in shrub communities in Police Coulee from 10 June to 23 July. It is interesting to note that to date no Weidemeyer's have been found in the study area although it has been reported for the lower Milk River.⁸ Kondla : has

also found it in the Sweetgrass Hills. Examinations by the authors of the Weidemeyer's specimens from Writing-on-Stone reported by Smith and Bird in 1977 has resulted in changing their identification to hybrids.

Viceroy (*Limenitis archippus*) - Common in poplar woods and shrub communities along the Milk River and in the coulees during July.

SATYRIDAE - Meadow Browns

Prairie Ringlet (*Coenonympha inornata benjamini*) - Fairly common in grasslands from 28 May to 26 June.

Large Wood Nymph (*Cercyonis pegala ino*) - Common in grasslands from 11 July to 29 August.

Small Wood Nymph (*Cercyonis oetus*) - Common in grasslands from 11 July to 29 August.

Riding's Satyr (*Neominois ridingsii*) - Occasional in dry grasslands: 10-11/7/80.

Uhler's Arctic (*Oeneis uhleri varuna*) - Occasional in dry grasslands during late May and early June: 28/5/81.

Alberta Arctic (*Oeneis alberta*) - Occasional in dry grasslands in the latter half of May: 16/5/82.



Riding's Satyr

Gary W. Seib

Discussion

Sixty-six species, representing six of the seven families of butterflies found in Alberta were recorded in the study area. Table 1 compares the Rhopaloceran fauna of the study area to that of Alberta. There is a slightly lower representation of Pierids and Satyrids in the study area as compared to

the provincial fauna. This is the result of a lack of any coniferous woods habitat and the fact that many species in these families have more northern and western distributions. In the Police Coulee fauna 56% of taxa have a widespread Alberta distribution, 17% are from prairie/parkland, 14% from prairie only, 12% with a prairie/cordilleran distribution and 1% are found only in cor-

Table 1. COMPARISON OF POLICE COULEE STUDY AREA AND PROVINCIAL RHOPALOCERAN FAUNA

Family	Police Coulee # of Species	% of Fauna	Province # of Species	% of Fauna
Hesperiidae	12	18	26	17
Palpilionidae	4	6	6	4
Pieridae	6	9	21	13.5
Lycaenidae	15	23	34	22
Nymphalidae	23	35	49	31.5
Danaidae	0	0	1	0.5
Satyridae	6	9	18	11.
Totals	66		155	

dilleran habitats. The Anicia Checkerspot is the cordilleran species recorded in this area, and occurs only as windblown strays from the Sweetgrass Hills.

Of the 66 species recorded for the study area 19 were recorded during May, 34 during June, 43 during July and 13 during August. The greatest diversity of species occurs in mid-July. It is interesting to note that this mid-July peak in this grassland ecoregion coincides with that found in the mainly mountain forest study areas of Banff National Park and the Indian Grave area.^{1 6} The best places to observe butterflies in the study area are the coulee edges, the shrub and treed areas, and along the creeks.

The relatively large number of species recorded for the Police Coulee area is the result of the interspersed of a number of different habitats and the proximity of the Sweetgrass Hills. Another area that has been extensively studied in southern Alberta is the Milk River - Lost River area located about 50 mi. east of Police Coulee.^{3 4 8 10} Both areas have similar habitats, except the lower Milk River - Lost River area lacks the coulees connecting directly to the Sweetgrass Hills and the higher elevation grasslands of the Mixed Grass Ecoregion. Table 2 compares the butterfly fauna of the two areas on a family level.

The Police Coulee area is a meeting area of western and eastern species. A number



View of study area looking from north boundary to the south H.W. Pinel

Table 2. COMPARISON OF BUTTERFLY FAUNA IN TWO MILK RIVER DRAINAGE STUDY AREAS

Butterfly Family	Milk River - Lost River (270 mi. ²)	Police Coulee ₂ (36 mi.)	Both Areas # Spp.	Species Common	Different Species	Remarks
Hesperiidae	15	12	18	9	9	Milk. R. - Lost R. only: Dun Skipper(<i>Euphyes vestris</i>), (<i>Ochlodes sylvanoides</i>), Rhesus Skipper(<i>Yvretta rhesus</i>), Checkered Skipper(<i>Pyrgus scriptura</i>), Persius Dusky Wing (<i>Erynnis persius</i>), <i>Oslar's Roadside Skipper (Amblyscirtes oslari)</i> Police Coulee only: Peck's Skipper, Tawny-edged Skipper, Long Dash.
Papilionidae	4	4	4	4	0	Police Coulee only: Large Marble.
Pieridae	5	6	6	5	1	Milk R. - Lost R. only: Spotted Blue (<i>Philotes enoptes ancilla</i>), Brown Elfin (<i>Callophrys augustus iroides</i>)
Lycaenidae	12	15	17	10	7	Police Coulee only: Striped Hairstreak, Acadian Hairstreak, Ruddy Copper, Rustic Arctic Blue, Pembina Blue
Nymphalidae	17	23	25	15	10	Milk R. - Lost R. only: Weidemeyer's Admiral, Gorgone Checkerspot (<i>Chlosyne gorgone carlota</i>). Police Coulee only: White Admiral X Weidemeyer's Admiral, Satyr Angle Wing, Gray Comma, Compton Tortoiseshell, Northern Crescentspot, Anicia Checkerspot, Silver-bordered Fritillary, Mormon Fritillary
Satyridae	6	6	6	6	0	
TOTALS	59	66	76	49	27	Of the 27 species not common to both areas 10 were found only in the Milk R. - Lost R. area; 17 were found only in Police Coulee.

of butterfly species are at the limits of their known range in Alberta. The Delaware Skipper, Sagebrush Checkerspot and Tawny Crescentspot are at the western edge of their range along the Milk River drainage. Examples of species at the southeastern edge of their known range in Alberta include Yellowpatch Skipper, Tawny-edged Skipper, Pembina Blue, Satyr Angleming, Gray Comma, Compton Tortoiseshell, Anicia Checkerspot and Silver-bordered Fritillary.

Similar habitat and larval food plants exist in the Police Coulee area for those 10 species already recorded for the Milk River - Lost River area, but not at Police Coulee (Table 2). Of these 10 species the authors feel that the chances of recording Rhesus Skipper (*Yvretta rhesus*) and Small Checkered Skipper (*Pyrgus scriptura*) are much less due to their distribution; these are probably strays to Alberta from the United States. Additional species likely to be found in the area include Nevada Skipper (*Hesperia nevada*), Great Copper (*Lycaena xanthoides*), Meadow Fritillary (*Boloria bellona*), Edith's Checkerspot (*Euphydryas editha*), Green Comma (*Polygonia faunus rusticus*) and Common Alpine (*Erebia epipsodea*). Because Police Coulee is at the southern edge of the province next to the Sweetgrass Hills new species for Alberta recorded as migrants, windblown strays or range extensions are more likely to be found here than in most other parts of the province.

Acknowledgements

Thanks are extended to Wayne Smith, Felix Sperling and Terry Thormin for their observations. Linda Pinel typed the manuscript.

¹ BIRD, C.D. 1975 A calendar of the skippers and butterflies of Banff National Park. Alberta Naturalist 5:71-75.

² HOWE, W.H. 1975 The butterflies of North America. Doubleday and Company Inc., N.Y. 633 pp.

³ KONDLA, N.G. 1983 Additional records of skippers and butterflies from Dinosaur Provincial Park. Alberta Naturalist 13(4):152-157.

⁴ KONDLA, N.G., T.W. THORMIN and T. PIKE 1981 Osler's Roadside Skipper in Alberta. Alberta Naturalist 11(1):15-16.

⁵ MILLER, L.O. and F.M. BROWN 1981 A catalogue/checklist of the butterflies of America north of Mexico. The Lepidopterists Society, Memoir No. 2. 280 pp.

⁶ PINEL, H.W. 1983 Skippers and butterflies of the Indian Grave Campground area, Alberta. Blue Jay 42(2):71-77.

⁷ PYLE, R.M. 1981 The Audubon Society field guide to North American butterflies. Chanticleer Press. N.Y. 916 pp.

⁸ SMITH, W.W. and C.D. BIRD 1977 Some butterflies and skippers from the Milk River - Lost River area of southeastern Alberta. Blue Jay 35(1):15-18.

⁹ STRONG, W.L. and K.R. LEGGAT 1981 Ecoregions of Alberta. Alberta Energy and Natural Resources, Tech. Rept. No. T/4. 64 pp.

¹⁰ THORMIN, T.W., N.G. KONDLA and C.D. BIRD 1980 Further records of skippers and butterflies from the Milk River - Lost River area of southeastern Alberta. Blue Jay 38(1):5-10.

EDITOR'S NOTE: Rhesus Skipper and Small Checkered Skipper both occur in Saskatchewan as fresh specimens that are apparently locally emerged. -- Ron Hooper.

CORRECTION.. In the article *Skippers and Butterflies of Crimson Lake Provincial Park, Alberta* by Harold W. Pinel [Blue Jay 43(3):155-159] there was an omission of several lines from the text of page 158. The article should read as follows:

Frigga Fritillary (*Boloria frigga saga*) - Occasional in damp grassy areas bordering tamarack bogs; 10-11/6/83, 14/6/84.

Freija Fritillary (*Boloria freija freija*) - Common in mixed woods and pine woods; flight period recorded from 16 May to 16 June; 16/5/78, 31/5/79, 10-11/6/83, 18 + 20/5/84, 15-16/6/84.

ADDITIONS TO THE MANITOBA BIRD LIST (1975-1984)

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The Manitoba birds field check-list (revised 1 April 1979) lists 279 species of birds that are believed to occur annually in Manitoba. An additional 32 species that have been seen on five or more occasions since 1900 are listed, while 28 species that have been reported less than five times in that period are not included.² The Manitoba Ornithological Records Committee (MORC) (H.W.R. Copland, Chairman; R.F. Koes, R.W. Nero, S.G. Sealy, W.J. Walley) is currently compiling an updated and complete check-list, which it hopes to publish in the near future

Additions to Manitoba's avifauna that have been made in the past 10 years are reported herein. For most of these species, material evidence in the form of a specimen, photograph or sound recording exists. Also included are well documented sight records made by two or more competent observers. Houston, Houston and Gollop outline the difficulties in evaluating sight records and follow the tradition of considering all sight records as hypothetical.²⁸ Recently, North Americans have started to adopt the practice of Western Europeans of accepting sight records for which independent, convincing reports have been provided by two or more competent observers.^{7 25} I refer readers to a treatise on the topic by Roberson in a recent issue of "American Birds".³⁸ MORC has followed this practice, but I have indicated here for which species material evidence is still lacking

A number of sightings have been made by single observers, or in certain cases adequate details are missing. These sightings must be considered unconfirmed or hypothetical, respectively. It is hoped that observers having additional information

regarding these sightings will report such information to MORC c/o **Herb Copland, Manitoba Museum of Man and Nature, 190 Rupert Avenue, Winnipeg, Manitoba R3B 0N2**. This will allow us to review the status of those species involved in time for the publication of the aforementioned check-list.

As becomes evident from the information below, birding activity has increased considerably in recent years. This can be attributed to a number of factors. Foremost, is probably the ever increasing coverage of the Churchill area. There appears to be no end to the possibilities at this birder's paradise and no doubt this list will be made obsolete in the near future by other records from that location. Secondly, the formation of the Manitoba Rare Bird Alert in 1976 has brought many of the active birders in contact with each other and this in turn has stimulated an enormous increase in fieldwork, resulting in several additions to the list. Thirdly, we have to be grateful for the growing number of Manitobans who show an interest in their environment and who take time to report unusual observations to their birding friends. The author would appreciate being informed of any missing, incorrect or incomplete information in this list

(Note: an asterisk* indicates that material evidence or adequate written reports confirm the presence of the species in the province and that the species has therefore been accepted on the Manitoba list.)

Yellow-billed Loon

This loon breeds in the high arctic and winters along the west coast. An adult was seen at Churchill on 26 June 1980 by A.

Reille.¹⁴ On 19 June 1981 another adult was observed at the same location by B. Aike, K. Kaufman, D. McRae and others.¹² McRae sent a convincing but incomplete report on the 1981 sighting (pers. comm. 20 October 1984). No other reports have been submitted.

Barnacle Goose

On 3 May 1981 J. and P. Christie spotted a Barnacle Goose in company of feeding Canada Geese near Croll in S.W. Manitoba.¹¹ Although photographs were taken, these were not distinct enough to substantiate the sighting (J. Christie, pers. comm. 10 January 1982). No detailed report has been forwarded to the Manitoba Museum of Man and Nature (MMMN) or MORC. The possibility that the bird had escaped from captivity seems likely.

Smew

An adult male was seen at Churchill on 7 November 1983 by K. and J. Wiggers.²³ The report in "American Birds" stated 'The first Smew for the region was a well described male,' but no description of the sighting of this Eurasian merganser has been received by the MMMN or MORC.

***Red-shouldered Hawk**

There are at least three reports of the species occurring in the province in the first half of the century, but the information on these sightings is sketchy (MMMN files). On 1 December 1978 an adult bird was struck by a car near Clearwater. It was taken by R. Dyck to A. Schritt. The bird shortly died of massive internal injuries and was donated to the MMMN. This specimen (#1.2-3488) represents the first confirmed occurrence in the province.⁴¹

The following spring (31 March 1979) several birders saw an adult migrating north along the Red River at St. Adolphe. A recognisable photograph was taken by N. Murdoch (now N. Johnston). What was presumably the same bird was an individual present in Winnipeg from 3 to 11 April 1979, seen by L. DeMarsh, G. Holland, and others.¹⁰ Four birds have been reported

since: 27 March 1981, Spruce Sands, D. Guinan;¹¹ 9 April 1983, one adult, St. Adolphe, R. Koes, I. Ward, et al.;²² 8 May 1983, Churchill, B. Chartier;²² and 7 August 1983, near Shilo, J. Coons and D. Paulson.²³

***Wandering Tattler**

A photograph of this species was printed in "American Birds."¹² The bird had been present at Churchill on 14 and 15 June 1981, and was seen by B. Feltner, D. Wyman, and other observers. Although we have not received details of the sighting, the photograph leaves no doubt about the identity of the bird, which is usually found in the vicinity of the west coast.

***Curlew Sandpiper**

S. Holohan and J. Christie observed this beautiful Eurasian shorebird at Oak Hammock Marsh Wildlife Management Area (WMA) during a routine shorebird census on 1 June 1981.²⁶ Another adult was sighted on 10 June 1983 at Churchill by D. McRae, S. Shadick, R. Tkachuk and others.¹⁷ Written descriptions of both sightings are convincing.

***Laughing Gull**

There are at least three sight records for this species in the province, the most recent one supported by photographic evidence. D. McRae obtained a series of photographs of a bird that was present at Churchill from 25 July to 9 August 1982.²¹ The same bird may already have been present on 9 July, when one was spotted by B. Chartier.¹⁶ The species had previously been recorded at Oak Hammock Marsh WMA by K. Gardner and P. Tully on 23 June 1974, and at Churchill on 9 and 14 August 1979 by C. Cuthbert, et al.⁹ 19 No written reports on the last two sightings have been received.

***Common Black-headed Gull**

The species was first recorded in the province 23 July 1970, when I. Newton, a visiting birder from Britain familiar with the species, saw one at Churchill. Unfortunately, this sighting was not confirmed by other observers.³⁷ On 11 and 27 July 1980 the

species was again observed at Churchill by D. Finch, B. Chartier, D. Fast et al.¹⁴

This Eurasian gull, which has recently started to colonize the east coast of North America,³⁶ has been seen at least three more times at Churchill: fall 1980, B. Chartier; 15 July 1982, D. McRae and P. Sinclair; and 18 June 1984, 1 adult, R. Koes, G. Grief, R. Tkachuk, A. Blewett, B. Shettler, and G. Walz.^{20 16 13} McRae obtained photographs of the 1982 bird, which we have not seen yet, while a photograph taken by A. Brady, which appeared in "Birding" cannot be considered 100% diagnostic.^{3 4} No details were provided with this picture. I took three photographs in 1984, again not entirely convincing.

Black-legged Kittiwake

Two birds have been reported, both at Churchill. D. Mark and B. Chartier saw the first on 11 June 1980 and a second bird was discovered on 18 July 1982 by B. Chartier^{14 16} and seen the next day by C. and L. Weseloh. It was also studied at close quarters for half an hour by D. McRae and P. Sinclair. Additional information on these sightings would enable MORC to evaluate the provincial status of this species properly.

***Ross' Gull**

The chance to see Ross' Gulls has lured probably thousands of birders to Churchill since the initial discovery on 20 June 1978 by members of the Linnaean Society.⁴⁰ That gull was present until at least 23 June and seen and photographed by several observers. No Ross' Gulls were reported in 1979, but in 1980 three pairs attempted to nest.⁶ These were the first known nests in mainland North America, far from the traditional breeding grounds in Siberia. The species has been observed yearly since, with as many as 10+ birds present in 1982 and the first known successful nesting in 1983.^{16 17}

***Band-tailed Pigeon**

This species has been recorded three times in the province. On 29 June and 3 July 1981 one was seen at Churchill by L. Augustowich and others.¹² W.J. Walley, unaware of the above record, reported a bird that had been present near Riding Mountain National Park from 15 to 27 April 1982 as the first record for Manitoba. This bird had been discovered by J. Crozier and was seen on 16 April by T. Jenkins, W. Clark and Walley. The latter also obtained photographs. This was the first documented record for the province.⁴⁶



Band-tailed Pigeon

W.J. Walley

R. Knapton and J. Richards made the third sighting for the province when they observed a bird flying over the tundra at Churchill on 2 July 1983 (MORC files).

***Rufous Hummingbird**

From early September to 18 October 1979 an adult male frequented the feeder of Mrs. O. Scott in Selkirk. K. Gardner confirmed the sighting on 14 October and the following day many of the Winnipeg area birders also studied the flashy little hummer. D. Fast took a series of fine photographs.¹⁹ Prior to this sighting there had been a number of unconfirmed reports: 27-28 June 1942 and 27 July 1948, one male, Churchill, Mrs. R. Beckett;²⁹ late July 1951, Brandon, Mrs. A. Caldwell;³³ July - 14 August 1951, Winnipeg, Mrs. W. Mackie;³² 3 August 1951, Treesbank, S. Criddle;³¹ and late summer 1978, Pinawa, R. Stiles.⁴³ Since 1979 the species has been recorded at least four more times in the province: 13 September 1982, one adult male, Brandon, H. Watson et al.;²¹ 14 + June 1983, one male, Churchill, D. Hatch et al.;¹⁷ 15 to 21 August 1983, Winnipeg, J. Logan, W. Neily and the author;²³ and 17-19 July 1984, Lyleton, J. Murray.¹³

Red-breasted Sapsucker

Like the previous two species, this bird is usually found in the western Rocky Mountains. Until recently it was considered a race of the Yellow-bellied Sapsucker, but in 1983 it was elevated to full species status.¹

The only documented record for the province involves a bird seen on 12 June 1977 just north of Riding Mountain National Park by W. Walley. Unfortunately it was not found again on a subsequent visit and no photographs were obtained (pers. comm. 26 March 1985).

***Willow Flycatcher**

The status of the Willow Flycatcher in Manitoba is not clear. Stewart shows it breeding commonly in the Turtle Mountains and Pembina Hills of North Dakota,

just south of the international border.⁴² Positive nesting evidence for the closely related Alder Flycatcher in that state was only obtained as recently as 1981.⁸

R. Knapton heard the "fitz-bew" song of a Willow Flycatcher on 3 June 1978 along Gainsborough Creek, immediately west of the Manitoba - Saskatchewan border.³⁰ Callin (1980)⁵ and Houston et al (1981)²⁸ also discuss the status of the species in Saskatchewan. In Manitoba the Alder Flycatcher is the more common of the two, but there can be little doubt that the Willow Flycatcher occurs more often than the few records seem to indicate. Two specimens in the National Museum at Ottawa (#16881 and #27895) have been identified as '*traillii*,' but only the first bird -- an adult male collected on 8 August 1921 at Oak Lake -- clearly fits the '*traillii*' measurements (W. Neily, pers. comm.)

To our knowledge no Willow Flycatchers were identified in the field until 6 July 1978, when Neily heard one at the Tobacco Creek bridge on his Jordan Breeding Bird Survey. He went back on 15 July and found two males that responded with identical songs to a taperecording which he played. No Willow Flycatchers were found at this location in subsequent years (pers. comm.)

Besides several other single-observer sightings, there are only a few multiple-observer sightings. In these cases identification was based on 'good' songs: 3 June near Delta, C. Cuthbert and staff of Delta Waterfowl Research Station; 14 June 1980, Lunday, G. Holland and I. Ward; and 3-5 June 1982, Oak Hammock Marsh WMA, G. Holland, P. Hamel, E. Carp, the author and others (MORC files).

Blue-gray Gnatcatcher

Between 8 and 17 November 1977 Mrs. L. Hatch and D. Hatch studied a gnatcatcher at the L. Hatch farm at Oak Lake.^{24 39} D. Fast discovered one near his Kleefeld home on 31 August 1982.²¹ Of all the birders who converged at this latter loca-

tion, only F. Fast and H. Lane managed to see the bird. Persuasive descriptions exist of both sightings, but they are unfortunately not complete enough for confirmation.

***Sage Thrasher**

A. Horn and P. Christie, Department of Zoology, University of Toronto, discovered a Sage Thrasher while studying Western Meadowlarks in the early morning of 10 June 1984 at the T. Peters farm just west of Oakland, near Delta.²⁷ S. Sealy and several birders from the Winnipeg area confirmed the occurrence later that day and the next 2 days. D. Fast and others took photographs of this inhabitant of the western sagebrush plains.

***White-eyed Vireo**

G. Holland, while running near Assiniboine Park in Winnipeg on 3 July 1981, recognized the distinctive song of a White-eyed Vireo. Although the foliage was thick and the traffic heavy in the area, he also managed to see the songster. Other birders alerted did not see it that day, but shortly after daybreak 4 July both W. Neily and D. Hatch saw and heard the vireo.¹² It was not found thereafter. Holland and Neily submitted complete reports to MORC. The species is not normally found north of southern Iowa.

***Green-tailed Towhee**

A Green-tailed Towhee visited a feeder at the rural home of A. and D. Schritt near Altona from 30 November 1981 until 4 January 1982.¹⁵ Birders from across the province and beyond travelled to the Schritt home and saw and photographed the towhee. It was not seen after a severe cold spell and likely succumbed to the weather

This towhee, which is normally found in the Rocky Mountains south of the border, has been recorded on one other occasion. D. Fast discovered an adult at a nursery near his Kleefeld home on 12 May 1984. It was seen by several of the avid birders living in southeastern Manitoba and also photographed. It was last noted on 14 May 1984.¹⁸

Brewer's Sparrow

On 20 June 1982 D. McRae, in company with P. Sinclair and J. Shykoff, carefully studied and identified a Brewer's Sparrow at Churchill.¹⁶ McRae provided MORC with an extremely detailed description, but as he was the only experienced observer of the three, the sighting could not be confirmed.

***Golden-crowned Sparrow**

An adult was reported by C. Crosthwaite at Pinawa on 29 and 30 April 1983. The bird



Sage Thrasher

D. Fast

appeared during an exceptionally heavy sparrow migration. A convincing description was given to P. Taylor.⁴³ The species was confirmed for the province when an adult showed up in the garden of M. Krueger at Altona on 13 and 14 May 1984.¹⁸ Hordes of observers converged at the Krueger home and photographed this western relative of the White-crowned Sparrow.

*Eastern Meadowlark

The characteristic song of an Eastern Meadowlark caught the attention of P. Taylor, while he was driving through agricultural country near River Hills on 13 June 1981. During the next month the bird was seen and heard by numerous observers and sound recordings were made by Taylor. A second bird was seen by G. Holland and D. Hatch. The latter observer noted intense courtship behaviour between the two birds, but apparently the specific identity of the second meadowlark was not determined.⁴³ Taylor recently discussed the possibility that the first bird had some 'Western blood' in its ancestry.⁴⁴

There was one previous, unconfirmed record. N. Foy saw and heard one near Tolstoi in the extreme south of the province 12 June 1975 (MORC files). Considering that the breeding range of the Eastern Meadowlark extends to northern Minnesota and northwestern Ontario, it is surprising that not more records exist.

*Brambling

What became known as the "Siberian Express" was a phenomenon that saw numerous Asiatic strays appear on the North American continent in the fall and winter of 1983, among them several Bramblings.³⁴ M. Siepmann discovered one in his E. St. Paul yard on 22 October 1983, where it remained until 24 October.²³ It was identified by the author and subsequently seen and recorded on film by numerous observers. The finch was believed to be a male, but this was not established with cer-



Brambling

R. Tkachuk

tainty. On 15 May 1984, an adult male turned up in a St. Vital (Winnipeg) yard, about 30 km to the south, where it was seen by J. Miller, W. May, D. Hatch and others.¹⁸ Again, photographs were taken. These two records could possibly have involved the same individual.

Cassin's Finch

G. Grief and G. Holland observed a bird they identified as a female Cassin's Finch with hundreds of Purple Finches at the Grief residence near Oakbank on 19 April 1981.¹¹ Two slides taken by Holland unfortunately cast doubt upon the validity of the identification.

*House Finch

This species has expanded its range so rapidly in recent years that it was only a matter of time before it would be recorded in Manitoba. Originally a western species, it was introduced in the east in the 1940's and spread quickly from there.³⁵ The first one to be recorded here was a female that visited K. Gardner's feeder in Stonewall between 29 March and 9 April 1983.²² Gardner alerted other birders, but the bird was shy and unpredictable and few managed to see it. The author took a series of diagnostic photographs

There have been at least three sightings since: 17 April 1983, one male, Oakbank, G. Grief; 2 May 1983, one male, Stonewall, K. Gardner; and 15-16 May 1984, one male, Altona, H. Wiens, A. and D. Schritt, G. Holland and R. Tkachuk.^{22 18}

Escapees and Others

The following species have been reported during the past decade, but they have not been included in the list, as circumstances surrounding the sightings indicated the birds had probably or certainly escaped from captivity: Mute Swan, Fulvous Whistling-Duck, Red-crested Cardinal and "budgies". Finally an ani was reported on 24 October 1979 near Headingly, but as it was not properly documented to species, it has not been accepted on the list (MORC files). In light of the fact that Minnesota boasts eight records for Groove-billed Ani, the Manitoba sighting does not seem far-fetched.⁴⁵

Acknowledgements

I wish to thank H.W.R. Copland, W. Neily, R.W. Nero, P. Taylor and W.J. Walley for their help in reviewing the manuscript and providing me with data. I further wish to thank all the observers who have sent documentation on their sightings to the MMMN or MORC.

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CHRISTMAS BIRD AND MAMMAL COUNTS

Count period is from Wednesday, 18 December 1985 to Sunday, 5 January 1986, inclusive. Count area should be a circle 24 km (15 mi.) in diameter. Count forms will be sent to compilers who submitted counts for 1984. Anyone else who wishes to send in a count please write for forms to **Mary I. Houston, 863 University Drive, Saskatoon, Saskatchewan S7N 0J8.**

Reports of counts should be sent to Mary Houston as soon as possible after they are taken. To be included in the report in the March 1986 Blue Jay they must reach Mary by 10 January at the very latest.

FALL MIGRATION OF BALD EAGLES PRODUCED IN NORTHERN SASKATCHEWAN

ALAN R. HARMATA and JOHN E. TOEPFER, Department of Biology, Fish and Wildlife Program, Montana State University, Bozeman, Montana, 59715 and JON M. GERRARD, R.R. 1, Box 113, Headingly, Manitoba. R0H 0J0.

Between January and March 1980 and 1981, six adult Bald Eagles radio-tagged on their wintering grounds in the San Luis Valley of south-central Colorado, were tracked to summering grounds in north-central and northeastern Saskatchewan and western Manitoba.⁷ Intensive investigations of summering Bald Eagles in this part of western Canada had been in progress for many years and the information generated from both projects was complimentary.⁶ ¹

5 2 10 12

The situation presented a unique opportunity to document the complete annual cycle of a relatively discrete population through a cooperative effort including researchers from both projects. In July 1982, a breeding pair was captured and radio-tagged with tail-mounted transmitters on Besnard Lake (55° 20'N, 106° 00'W). Subsequent tracking produced much unique data concerning home range size and use, territoriality, activity, and intra-range movements of adults with young.³ However, sequence and timing of tail feather molt undocumented prior to this study, did not permit retention of transmitters for tracking eagles on fall migration, and additional pairs were not captured at that time. An additional breeding adult was captured on 1 September but its molt had still not progressed sufficiently to insure retention of the transmitter for the duration of migration. However, a transmitter was mounted on two of the new tail feathers and this bird was later followed for 5 days of migration.¹¹ Since tail-mount packages are preferred over any other method of attaching transmitters on adult eagles, it was

evident that capture and marking of adults after 1 October would be required. Instrumented adults indeed dropped the transmitters between 9 September and 6 October. Logistical and financial constraints dictated cessation of work for the 1982 season.

In 1983, adult and nestling eagles from three family groups were to be fitted with radio transmitters on Besnard Lake. The primary objectives of the study were to:

- (1) determine if family groups of Bald Eagles remain together on fall migration and document behavior and interactions among and between family groups
- (2) identify stopover areas used on fall migration
- (3) identify the routes and mechanics of fall migration
- (4) determine the wintering grounds of eagles from a known breeding/natal area.

Methods

Nestling Bald Eagles were fitted with 80 - 90-g solar powered transmitters attached by backpack harnesses. Transmitters were AVM 2B5 2-stage with 10 solar panels. Solar transmitters have a theoretical unlimited life but realistically may function up to 5 years. The backpack attachment was designed to be shed no longer than 5 years from installation.

Nestlings were radio-tagged at 7 to 9 weeks of age. Each nestling was taken from the nest, banded, measured, radio-tagged and returned to the nest.

ERRATUM: FALL MIGRATION OF BALD EAGLES PRODUCED IN NORTHERN SASKATCHEWAN.

ALAN R. HARMATA and JOHN E. TOEPFER, Department of Biology, Fish and Wildlife Program, Montana State University, Bozeman, Montana, 59715 and JON M. GERRARD, R.R. 1, Box 113, Headingly, Manitoba. R0H 0J0

Blue Jay 43(4):232-237.

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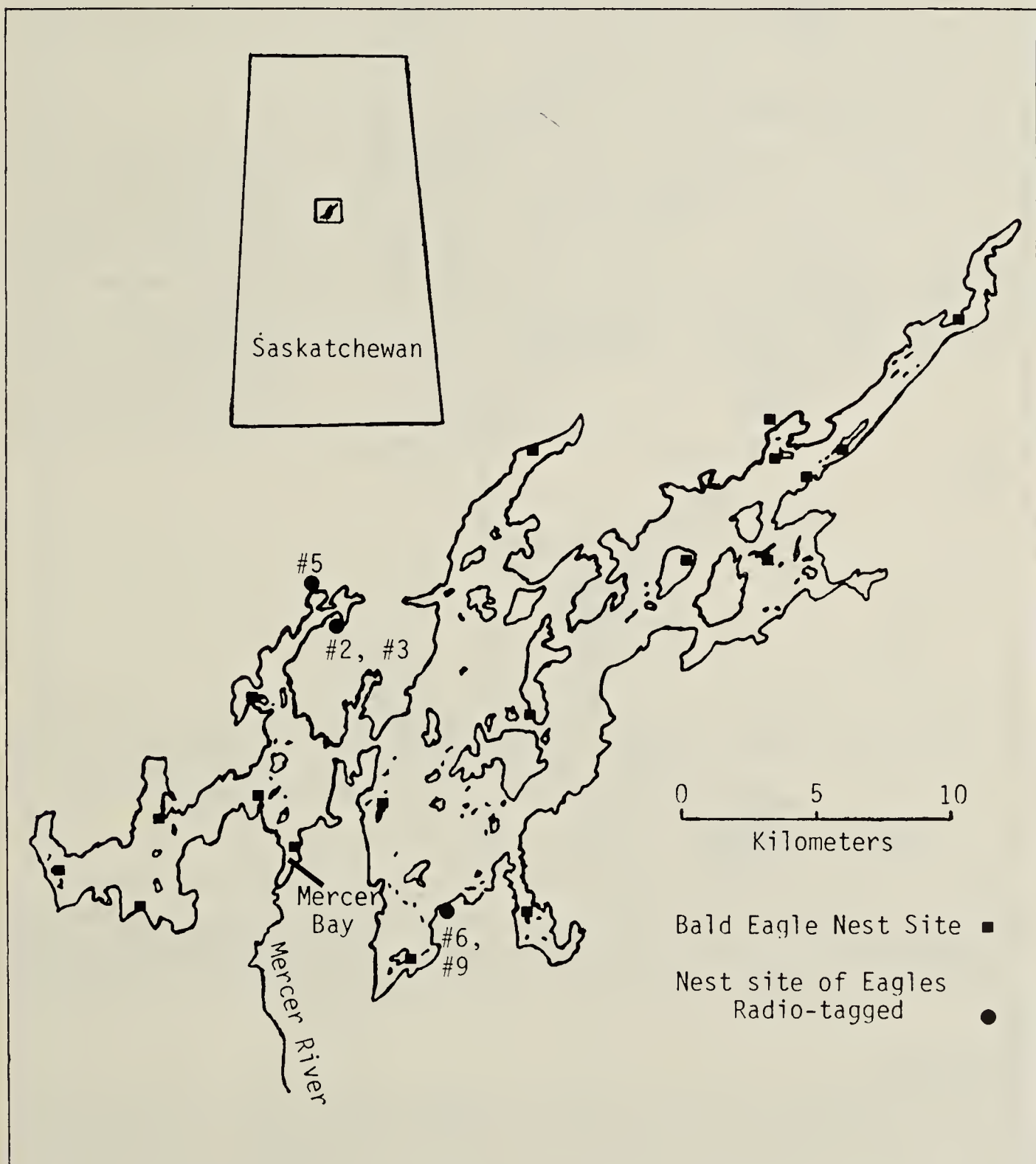


Figure 1. Bald Eagle nest sites and natal nests of juvenile Bald Eagles radio-tagged on Besnard Lake, Saskatchewan, July 1983. Numbers indicate receiver channel numbers.



Adult Bald Eagle at nest

J. Gerrard

On 1 November 1983, Besnard Lake was surveyed by air to locate instrumented eagles. Only two (#2, #6) were located, both at Mercer Bay (Fig. 1). Bad weather prevented inspection of Mercer Bay by boat until 3 November. Two adults and three immature/subadult eagles were seen but no radio-tagged eagles were located. Signals indicated one eagle, #6, was in the vicinity of the Mercer River, about 2 km south of Mercer Bay (Fig. 1). Both radio-tagged eagles apparently left Besnard Lake on 2 November, the day after Mercer Bay froze over.

Migration Routes

From 4 November until cessation of tracking 15 November, eagles were monitored from fire towers (Fig. 2) and vehicles. Migration routes of radio-tagged eagles are shown in Fig. 2. Distance traveled in 6 days was 231 km.

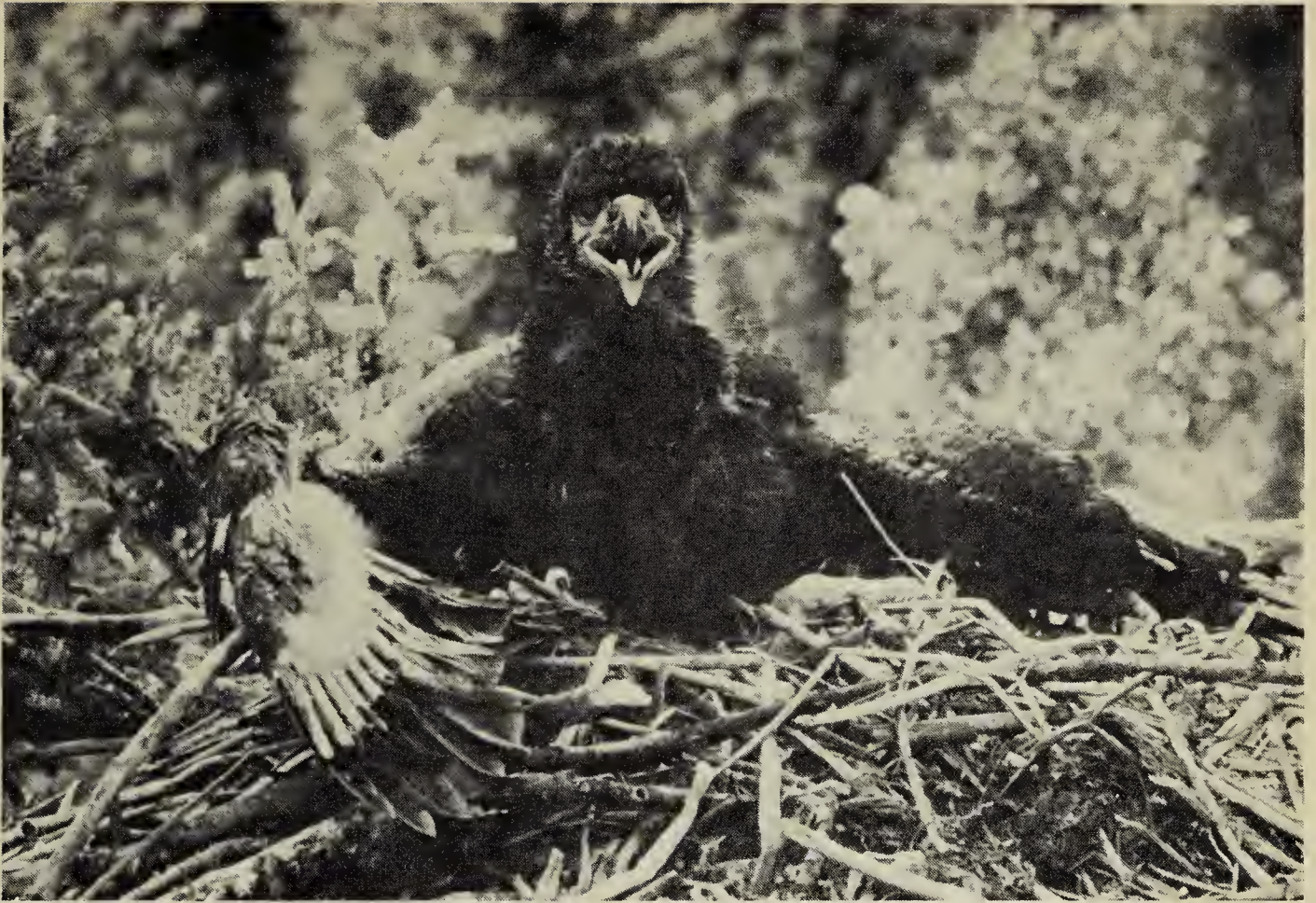
While moving through the boreal forest, eagle #2 apparently oriented along heights

of land, as shown by the proximity of his flight route to fire towers (Fig. 2). Once out of the boreal forest/Canadian shield country, he made an abrupt course change west-southwest towards the Sturgeon River where he eventually roosted for the night. Leaving the Sturgeon River he again assumed a southerly direction. After crossing Highway 3, he travelled west-southwest, eventually stopping in the vicinity of the Thickwood Hills (Fig. 2).

Eagle #2 was not observed in the company of any other eagles while in flight, however other eagles were seen along the route and were present at most stops and identified roosts.

Flight Mechanics

Migratory flights were easily distinguished from short flights within foraging areas (Fig. 2). Foraging flights were characterised by short, direct flights under 50 m in altitude, without soaring. Migratory flights



Eaglet in nest

J. Gerrard

were initiated by circling (soaring or powered flight) and followed by a glide or flapping flight in one compass direction, usually south or southwest.

Duration of migratory flights that were sufficiently documented to permit evaluation ranged from 30 sec. to 122 min. [n (sample size) = 12, $\bar{x}$ (mean or average) = 44.2 min., S.D.(standard deviation) = 38.2]. Distances covered per flight ranged from 200 m to 37.5 km (n = 4, $\bar{x}$ = 17 km, S.D. = 14.7). Migratory flights were usually initiated between 1100 and 1300 h (n = 16, mode = 1200 h). Flights terminated between 1400 and 1550 h. Average distance traveled was 32.8 km/day, and average speed in level (non-soaring) flight was 26 kmph (n = 3).

Altitude of migratory flights ranged from 54 m to 180 m but averaged about 81 m. Weather was overcast on all but 2 tracking

days. On clear days eagle #2 flew higher, generally 100-180 m.

Wintering

In January 1984 many wildlife refuges and other known Bald Eagle wintering areas in South Dakota, Nebraska, Oklahoma, Texas, Missouri and Iowa were searched for radio-tagged eagles. No signals were heard and no eagles wearing non-functioning backpack radios were seen.

Homing

In July 1984, Besnard Lake was surveyed by boat to search for returning radio-tagged eagles. No signals were heard and no eagles wearing non-functioning backpack radios were seen.

Discussion

Although data are incomplete, certain generalisations can serve as hypotheses to be tested in the future with adequate fund-

ing and better equipment permitting larger samples, more fortuitous timing, and more complete tracking.

The condition of primary foraging areas on Besnard Lake appeared to be the major stimulus to initiate migration of juvenile eagles. Both radio-tagged eagles found on Besnard Lake in November were at Mercer Bay, even though they had fledged from nests over 8 km apart. Mercer Bay is known for its productive fishery and is closed to fishing. Both radio-tagged eagles were near the mouth of the Mercer River on 1 November when the river and the upstream stretches of the bay were free of ice. Between 1 and 3 November these areas froze over and the radio-tagged juveniles were subsequently not located on the lake. Other juvenile eagles were seen on the bay on 3 November but appeared in the company of adults. Possibly juvenile eagles without parental tutelage leave the natal areas earlier than their contemporaries. However, adults and immatures may have left the lake soon after 3 November.

Photoperiodic cues may be responsible for the initiation of spring migration for adult Bald Eagles.^{8,7} However, sensitivity to proximate ecological factors rather than photoperiodism would appear to be adaptive for the initiation of fall migration. Remaining in the natal/breeding area during years of mild weather, late ice-up, and abundant prey would minimise energy expenditures facilitating survival and productivity.

Orientation and navigation from Besnard Lake by eagle #2 may have been facilitated primarily by physiography, after an initial compass direction was selected, since parental guidance was obviously lacking. However, migrating immatures may have been following courses of other eagles well out of visual range of human observers. Eagle #2 apparently moved due south after leaving Besnard Lake orienting on heights of land as shown by the proximity of fire towers along the migration route (Fig. 2).

Once out of the boreal forest, the eagle made an abrupt turn to west-southwest eventually roosting in dense conifers along the Sturgeon River. This is the first large stand of conifers to be encountered south of the forest and the eagle may have cued on familiar ecotypes once in an unfamiliar area (parkland country). Subsequent movement was again south hinting at sun-compass orientation but all but 2 days of migration were totally overcast.⁹ Gerrard and Hatch, and Harmata noticed that on days of total overcast on northward migration, eagles seldom flew, except locally.^{4,7} In the absence of celestial cues, eagle #2 continued south until possibly within sight of other prominent physiographic features and/or familiar ecotypes in the Thickwood Hills (Fig. 2) 35-45 km away. Other eagles encountered enroute may have facilitated selection of roost sites and foraging areas and/or flight line.

Flight mechanics of radio-tagged juveniles on fall migration differed greatly from adult eagles tracked on spring migration.⁷ Flight of juveniles was slower, altitudes lower, distances travelled smaller, and durations considerably shorter. This can be expected of a young eagle presumably not goal-oriented and travelling over totally unfamiliar territory. However, an adult eagle followed for 5 days in 1982 also travelled relatively slowly and this pattern may be characteristic of fall migration.¹¹

Stopover areas such as the area west of Leask (Fig. 2) may be essential for the survival of a large number of Bald Eagles over an extended period of time. Eagle #2 remained in the Leask area for at least 4 days and fed there at least twice. The area appeared to contain an abundance and diversity of prey. Deer hunting season was in progress and eagles may have been foraging on viscera piles left by hunters. Sharp-tailed Grouse were observed daily and were used by eagles. Waterfowl frequented open water in the vicinity and probably were fed upon by eagles. Turnover of eagles may have been daily over weeks, supporting

large numbers not evident at any one time. Many similar stopover areas in western North America may be threatened and every effort should be made to document their location and importance to bald Eagles.

Stopover Point

From 10 November until last located 15 November, eagle #2 remained in a 56 km² area centered about 20 km west-southwest of Leask, 88 km north of Saskatoon. Five other Bald Eagles, two adults and three juveniles also frequented this area. Eagle #2 was observed feeding here twice, once on a Sharp-tailed Grouse killed in a collision with a powerline and once on a Porcupine, apparently killed by an eagle. Martin and Padding lakes are also located in this area and waterfowl concentrated there. Although not seen chasing or feeding on waterfowl, the local eagles (including eagle #2) commonly perched along the shoreline near waterfowl concentrations.

Acknowledgements

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SUCCESS OF OSPREY NEST PLATFORMS NEAR LOON LAKE, SASKATCHEWAN

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In an effort to help the Ospreys and facilitate our banding we have in four different years moved Osprey nests from dead trees onto platforms. The initial report on Osprey nest success mentioned the first three platforms placed on 25 and 26 March 1978, one without any nesting material.¹ One platform was used that year, with three young banded 22 July 1978, but was not successful again, although Ospreys were in attendance in both 1979 and 1980. One occupancy in 5 years with 3 platforms available is a discouraging record.

In July 1981 farther east along the north shore of Loon Lake, the junior author somewhat nervously climbed 39 feet to the top of a dead spruce to band three young. In 1982 this dead tree had tipped 45 degrees; by sheer coincidence and against 360 to 1 odds it fell exactly so that an adjacent live spruce supported both the tree and the nest. With great difficulty Ken Simes climbed the live spruce and gingerly banded two young Ospreys in the precariously lodged nest. During the first storm after the young fledged, the nest tree fell completely down. Clearly something had to be done.

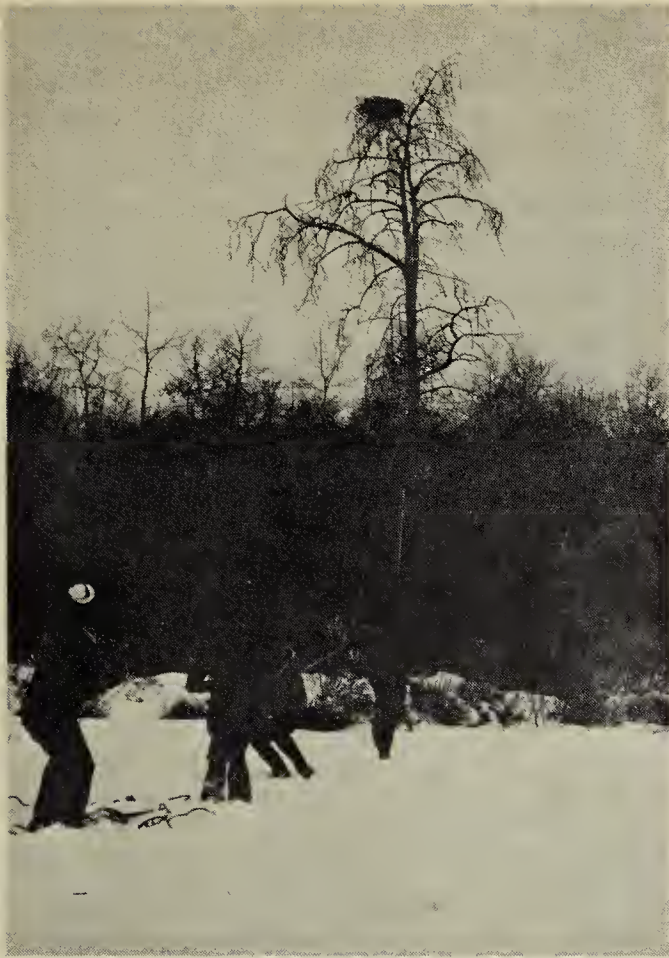
Platform building resumed 19 and 20 March 1983. The party consisted of Ron Marlatte and Jim Slimmon from Saskatoon, Bruce Donovan from Nipawin and Bert Dalziel from White Fox, together with the authors. The nearest sound tree, on a gravel ridge less than 100 yards across a narrow swamp from the lakeshore, was lopped off at a height of about 18 feet, a platform constructed, and contents of the old nest moved onto it. Although easily visible to any fisherman who looks for it, its position allows the incubating Osprey a magnificent

view of the lake. On 16 July 1983 three young were banded on this platform and on 15 July 1984 two smaller young were banded.

On 11 July 1985 two young were seen from the air by the senior author, but they were missing by the banding visit of 14 July. A large person or animal had moved through the adjacent underbrush recently; there was a freshly broken branch part way up to the platform, and no bear or racoon claw marks were visible. It is unimaginable why any human would take two young Ospreys as pets, but 3 years ago a man was apprehended for chopping down a tree beside Highway 21, to obtain the young Ospreys in the nest. One of them was killed by the fall; the man received a \$200. fine.

The other two platforms in 1983 were placed on the south side of Ministikwan Lake, one on a hill at some distance from the lake but with a clear view of the water, and the other without a view of the lake. These have not been used.

On 17 and 18 March 1984 the helpers consisted of Ron Jensen, Sean Morrissey and Richard McBride. In a large dead Jack Pine on the shore of Tullibee Lake, young had been banded at some risk by Tim Molnar 19 July 1981 and by Kelly Wylie 16 July 1983, in a nest at a height of 50 ft. This tree was reduced to a safer height of 22 feet. Although the original nest materials were placed on the platform and although a superb view of the lake was available for the incubating Osprey, this platform has not yet been used.



Moving a nest from a 50+ ft. Jack Pine on Tullibee Lake to a platform 17 March 1984.

Ron Jensen

A second platform was placed on a hill east of Peck Lake. In 1983 the nest was balanced precariously on two stems of a dead Jack Pine, 49 ft. above the ground, so that the young could not be safely banded. A platform was constructed 35 ft. above ground and the nest lowered onto it. The two 14 ft. stems, each little more than an inch in diameter, were dead and extremely brittle; it was amazing that they had withstood previous storms. The new platform allowed a view of the lake and was successful with two young banded in each of 1984 and 1985.

On 9 March 1985 a platform-building crew consisted of Kelly Wylie, Dan Neves, Bert Dalziel and Bruce Donovan. At the north end of Upper Makwa Lake a platform was placed 28 ft. above ground in a Jack Pine, after removing the dead upper part of the tree. The nest was moved from an adjacent dead Jack Pine which was then cut down.

Another nest was in a single Tamarack in a swampy bay at the southwest corner of Upper Makwa Lake. This tree was precarious indeed and could almost be pushed over. A platform was placed 26 ft. from the ground in the nearest adjacent Tamarack. Both of the new platforms raised young and three were banded at each 13 July 1985.

Discussion

Our two motives in placing these platforms fortunately do not conflict. Admittedly, it is desired to have a higher percentage of Osprey nests in trees that are safe to climb. Most tall, dead trees are unsafe. A nest weighing more than half a ton, placed at the very top of a dead tree also forms a potential risk for the young Ospreys. When the nest tilts during a storm, the eggs may roll out. If the tree blows over, the young nearly always die. Furthermore, platforms offer less susceptibility to wind damage and greater security from ground predators. In

Nova Scotia, Ospreys are 20% more successful when they nest on utility poles than when they nest in natural trees.² In Florida there is less egg loss at artificial platforms, resulting in about twice as many young per active nest, when platforms are used.³

Since this study began in 1975 no Osprey pair has built a nest and raised young the same year. When a tree at risk of blowing over is correctly identified there is hope of saving that year's production as well as a second year of nest building.

Rather than guessing at the location a previously occupied site is chosen. Chances of success are much greater if the platform height allows the incubating Osprey to see the surface of the lake and if the platform tops the trees within a radius of 20 or preferably 40 ft. on three sides of the nest.

The basic support structure of our platforms has not changed (Fig. 1). It consists of four pieces, each 8 ft. long of 2x6"

lumber. To expedite building, all holes are predrilled and carriage bolts put in loosely. Each pair of 8-foot planks, hinged together by a loose carriage bolt, is raised by rope to the desired level. The upper lag bolt is fastened securely to the tree with one plank horizontal, then the lower end of the oblique support plank is fastened to the tree by another lag bolt. The horizontal planks are arranged to diverge outward on the side of the tree facing the lake, forming an adequate angle to support a platform. One plank protrudes 2 ft. on the opposite side of the tree to the platform and gives the bander an adequate perch from which to work. The other protrudes beyond the platform as a perch for the birds. Four cross-pieces, of increasing length, are nailed to the planks to form a V-shaped platform. After final tightening of lag bolts, the sticks from the previous year's Osprey nest are raised onto the edges of the platform and then the fine material from the nest depression, including fish scales, is formed into a smooth, depressed cup.



Two Osprey nestlings on new platform, Loon Lake, 16 July 1983

Hans S. Dommasch

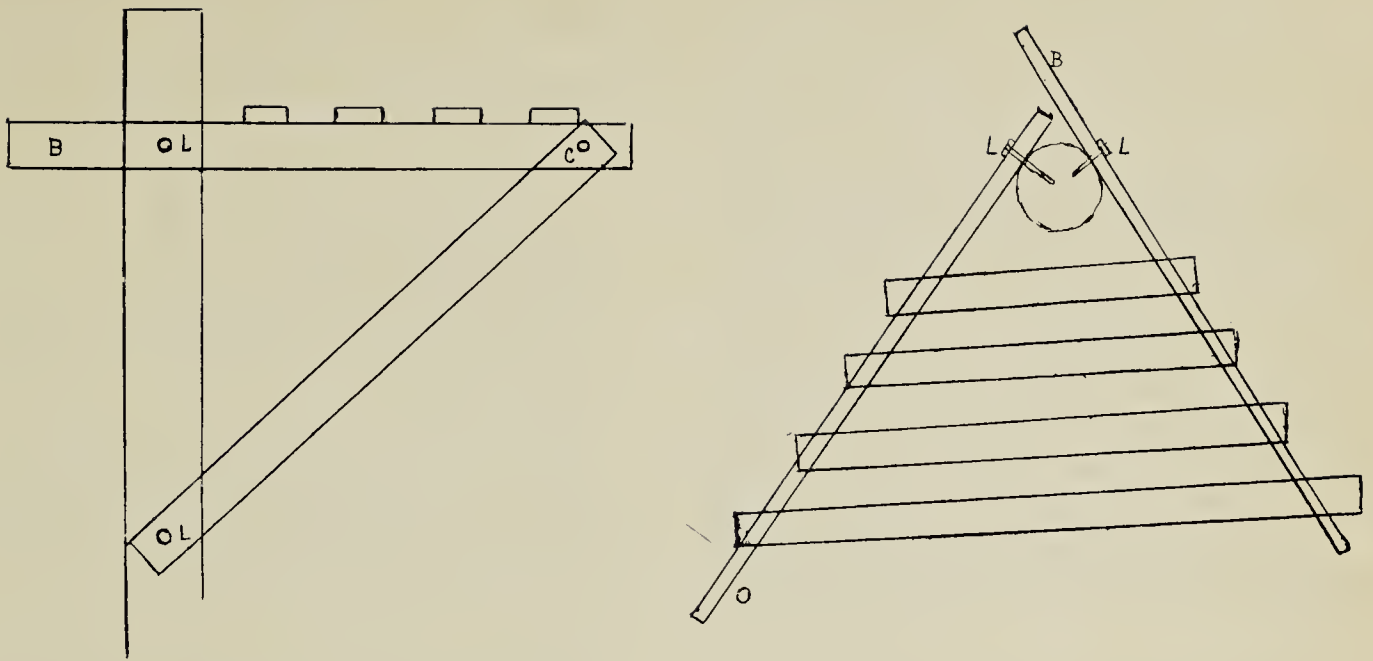


Figure 1. *The new nest platform structure.* B - bander's perch; C - carriage bolt; L - lag bolt; O - Osprey perch



Stuart Houston banding nestlings at Osprey platform near Peck Lake, 13 July 1985
Mary I. Houston

Using locally cut lumber, the price of each platform is now approximately \$15.00, including hardware and nails. The first year we used half sheets of 1" plywood (4 ft. x 4 ft.). To keep nest material on the platform 0.5" dowels 6" long were inserted vertically close to the periphery of the plywood. The resulting platform was heavy to lift up to the top of the tree, was very expensive and did not allow rapid drainage after a rain. After the first three platforms the above design of 2x6" cross pieces fastened to the horizontal supports with 3.5" nails was used. This structure is both cheaper and lighter to lift. Any cutting necessary on site is done with a small chain saw, neither elegant nor precise, but quick and easy.

Success rate is improving -- three of the last four platforms constructed have been used. Including the 1978 construction five of ten platforms built have been used successfully at least once.

The number of unsafe trees, at risk of blowing over in a storm, has been reduced from eight in 1982 to six each in 1983 and 1984 and four in 1985. Another dead tree, in a large slough south of Loon Lake, is inaccessible in summer. Another nest south of Ministikwan Lake is 0.5 mi. from water, would be difficult to reach in summer and no adjacent tree would allow a view of the water. Such sites are not prac-

tical for replacement. However, there are two excellent and appropriate sites chosen for the March 1986 work party. It is also planned to trim off the new branch that has sprouted above the platform built in 1978 and to clear away several nearby trees that may restrict the Ospreys' approach.

Acknowledgements

Financial support for the costs of materials was supplied by the Saskatchewan Natural History Society.

The increasing success rate is heartening. Experience has enabled us to avoid repetition of some of our earlier errors.

¹ HOUSTON, C.S. and FRANK SCOTT 1983 Osprey nesting success in west-central Saskatchewan. *Blue Jay* 41(1):27-32

² SEYMOUR, N.R. and R.P. BANCROFT 1983 The status and use of two habitats by Ospreys in northeastern Nova Scotia. Pp. 275-281 *In* *Biology and Management of Bald Eagles*. Edited by D.M. BIRD, N.R. SEYMOUR and J.M. GERRARD. Harpell Press, Ste. Anne de Bellevue, Quebec.

³ WESTALL, M.A. 1983 An Osprey population aided by nest structures on Sanibel Island Florida. Pp. 287-293 *In* *Biology and Management of Bald Eagles*. Edited by D.M. BIRD, N.R. SEYMOUR and J.M. GERRARD. Harpell Press, Ste. Anne de Bellevue, Quebec.

ENDANGERED SPECIES WORKSHOP

A workshop on endangered species in the prairie provinces will be held at the **Provincial Museum of Alberta, 12845 - 102 Avenue, Edmonton, 24-25-26 January 1986**. Presentations on 10 rare, threatened and endangered species in the prairie, aspen parkland and boreal forest ecoregions of Canada will be made in the auditorium.

At working sessions participants will discuss education, habitat conservation and the status and conservation needs for 15 other species. Two live endangered species will be on display, along with exhibits on prairie wildlife. Proceedings are to be published. Registration fee for the workshop is \$10. and the fee for the banquet is \$20. To register and for more information contact **Endangered Species Workshop, Federation of Alberta Naturalists, Box 1472, Edmonton, Alberta T5J 2N5**, or phone **Ms. Jo Wiskerke 403-428-3033** or **Dave Ealey 403-434-0841**. Participants must pre-register by mail. Please submit registrations by **31 December 1985**.

FERRUGINOUS HAWK NEST PLATFORMS — PROGRESS REPORT

C. STUART HOUSTON, 863 University Drive, Saskatoon, Saskatchewan. S7N 0J8

A previous article described how six Ferruginous Hawk platforms were placed in the less treed northern end of the Kindersley-Elna Community Pasture late in 1972.¹ The first of these platforms was successful in 1976, and subsequently up to three Ferruginous pairs and one Swainson's Hawk pair used one to four poles per year until 1982. That year, on the same pasture, eight of eight pairs of Ferruginous Hawks nesting in trees were successful and two of five pairs of Swainson's Hawks were successful. One of the Swainson's Hawk nests was on a platform; it produced only one addled egg. In 1983, 1984 and 1985, in spite of adding a shade board at one of the platforms in 1984, not one of these platforms has been used again. Perhaps they are not ideally located, since they compete with available trees at 15 separate sites on this 24.5 mi.² pasture, and even without the platforms this pasture carries the highest density of Ferruginous Hawks ever reported.

On 12 September 1982 three poles were placed at 1-mi. intervals in the western unit of the Oakdale Community Pasture near "Buffalo Coulee," three poles at 1-mi. intervals in the main or "Beaufield" unit of the Oakdale Community Pasture, and two poles in the western unit of the Eagle Lake Community Pasture. The crew consisted of Keith and Jean Harris, Kelly Wylie, Cathy Tomlinson, Alan Smith, Nigel Caulkett and the author (Fig. 1).

As in the Kindersley-Elna Community Pasture success was negligible the first year. In 1983 one Swainson's Hawk began incubating on the only pole that contained shade slats at Beaufield and another used an open platform on the Eagle Lake Pasture. Both failed. In 1984 a Ferruginous Hawk used the southeasternmost pole at Beaufield and had two young in the nest on 12 June. The nest was empty and had failed by 24 June, most likely due to Great Horned Owl predation. The Swainson's Hawk on the



Figure 1. Platform building crew, Oakdale Community Pasture, 12 September 1982
Jean Harris

northernmost pole at Buffalo Coulee failed, but the one at the shaded northwest platform at Beaufield was our first success from this group of eight platforms; two young were banded 21 July.

Since the first six nesting platforms had ceased to be used and since the only one of the eight new poles used was the only shaded platform, it was decided to add a shade structure to the other seven new platforms. A work crew consisting of Keith Harris, Kelly Wylie, Ron Jensen and the author did the job 30 September 1984. First the platforms were moved from the original position at the very top of the pole and replaced on support arms about 3 ft. below the top, on the north side of the pole. This allowed the pole itself to provide some shade. Various types of additional shade were provided, chiefly by sheets of plywood up to 3 ft. wide.

In 1985, after this modification, all three poles in the Beaufield Pasture were oc-



Young Ferruginous Hawk on platform
Jean Harris

cupied. The modified middle pole fledged three young Ferruginous Hawks, which were banded on 1 July. On 20 July the southernmost pole contained a Swainson's Hawk still incubating a single addled egg, while the original shaded north pole contained one downy young Swainson's Hawk and an addled egg. The northernmost Buffalo Coulee pole, which had a Swainson's Hawk incubating 1 July, had failed and was empty on 21 July.

Discussion

There is a great potential for the use of nesting platforms for Ferruginous Hawks in Saskatchewan. In our experience they require one or preferably two mi.² of pasture containing numerous Richardson's Ground Squirrels. They also need a nesting site. In open pasture country since 1940 their commonest choice has been a tree within the shelter belt of a deserted farmstead; such trees, if they have not been bulldozed are now deteriorating with age.

Unlike in northwestern South Dakota, Ferruginous Hawks here have not been found nesting on flat areas of ground, though they sometimes nest on steep hillsides along river valleys. In Saskatchewan they have not been recorded nesting on a haystack since 1917, on telephone pole crossarms since the 1930s and only twice have they been recorded nesting on rock piles.² Further, many choose to nest in dead or dying trees, which are frequently blown over by the wind. A quarter ton or more of nesting material provides a lot of leverage at the top of a dead tree once it begins to lean. Woffinden and Powers found that 17% and 15%, respectively, of all Ferruginous Hawk nests in their study areas in Utah and Idaho were blown down by strong winds each year.^{8 5} A stable platform should provide a higher prospect of success.

There is conflicting evidence as to whether or not Ferruginous and Swainson's hawk nestlings need shade. We have frequently encountered both species nesting at the very top of a tree with no shade what-



Stuart Houston banding nestling Ferruginous Hawk at nest platform
Jean Harris



Kelly Wylie banding nestling Swainson's Hawk at nest platform. Oakdale Community Pasture, 20 July 1985
Stuart Houston

soever. Those Ferruginous Hawks using steep hillsides also have no shade.

In a portion of the Snake River Birds of Prey Natural Area in Idaho, where no Ferruginous Hawks had nested previously, Howard placed 12 pairs of artificial nest platforms, one with a sunshade and one without. The distance between the two poles in each case was 150 yards. Seven nestings by Ferruginous Hawks occurred during 4 years, five of which were successful, all on the *unshaded* structures.³

However, in southern Alberta Josef Schmutz has noted that a single nestling will align itself with the shade from an overlapping pole, when the platform is below the top of the pole.⁶ Schmutz found that shaded nests were occupied statistically more often than unshaded nests, corroborating the observation of Olendorff.^{7 4}

Since platforms are expensive in time and materials, costing upwards of \$100. per installation, even with volunteer labour, it is suggested that in future they be placed only in pastures without trees. The Buffalo Coulee and Beaufield sites are treeless except for a few willow clumps near the south end and one aspen clump in a coulee at the north end of the former, and some scattered trees around the outside of the latter.

In future we shall place poles only when no other nesting sites are available within 1.5 mi. and would then place them at 1-mi. intervals across the centre of the pastures. We still do not know what factors may have changed at Kindersley, although some of the poles are only 0.5 mi. from occupied trees. The only pole that has not yet been used is within 0.25 mi. of the solitary tree that has been occupied and successful for 26 consecutive years, perhaps a world

record. This tree was illustrated in Figure 1 of a 1982 article.¹ Its roots are exposed, it is continually rubbed by cattle, and yet it continues upright, whereas the nearby pole was the first to fall down (in 1985). Meanwhile, Pasture Manager Jim Hoffman plans to place a protective fence around the tree.

It is still difficult to know how much shading to provide. Any future poles will be on the south side of the platform and will extend for several feet above the platform. Probably one additional slab of plywood, 2-3 ft. wide, alongside the pole is a reasonable compromise. This should provide sufficient shade, yet not inhibit the view of the incubating hawk to a disturbing degree. Further modification of the four remaining unshaded Kindersley platforms were completed on 13 October 1985.

Acknowledgements

Jean and Keith Harris, the key participants in this project, have donated their time, enthusiasm and equipment for both platform-building expeditions. Further, since 1972 they have devoted unusual amounts of time and gasoline, locating about 300 Swainson's Hawk nests, of which 193 have been successful with 371 young banded. In 1985, the peak year, 67 young Swainson's Hawks were banded in 32 successful nests. The annual search is a continuing process since the rate of reuse of nests by Swainson's Hawks is low. Jean and Keith have also introduced me to a number of Ferruginous Hawk sites, many of which have been used in consecutive years.

The Conservation Fund of the Saskatchewan Natural History Society provided financial support in 1982.

Hubert Solverson and Jim Hoffman, successive managers of the Kindersley-Elna P.F.R.A. Pasture and Ed Melchior, manager of the Oakdale P.F.R.A. Pasture, have been most cooperative.

- ¹ HOUSTON, C.S. 1982 Artificial nesting platforms for Ferruginous Hawks. *Blue Jay* 40(4):208-213.
- ² HOUSTON, C.S. and M.J. BECHARD 1984 Decline of the Ferruginous Hawk in Saskatchewan. *American Birds* 38:166-170.
- ³ HOWARD, R.P. and M. HILLIARD 1980 Artificial nest structures and grassland raptors. *Raptor Research* 14:41-45.
- ⁴ OLENDORFF, R.R. 1973 Ecology of the nesting birds of prey of northeastern Colorado. United States International Biological Program, Grassland Biome, Fort Collins, Colorado. Technical Report #211. 233 pp.
- ⁵ POWERS, L.R. 1981 Nesting behaviour of the Ferruginous Hawk, *Buteo regalis*. Ph.D. Dissertation. Idaho State Univ., Pocatello. 312 pp.
- ⁶ SCHMUTZ, J.K. 1983 Artificial nests for Ferruginous Hawks in southeastern Alberta. Unpublished report, Arctic Institute of North America, University of Calgary, Calgary, Alberta. 31 pp.
- ⁷ SCHMUTZ, J.K., R.W. FYFE, D.A. MOORE and A.R. SMITH 1984 Artificial nests for Ferruginous and Swainson's Hawks. *J. Wildlife Management* 48:1009-1013.
- ⁸ WOFFINDEN, N.D. 1975 Ecology of the Ferruginous Hawks, *Buteo regalis* in central Utah: population dynamics and nest site selection. Master's Thesis. Brigham Young University, Provo, Utah. 102 pp.

YELLOW-CROWNED NIGHT-HERON

MAURICE LINDGREN, Box 666, Fort Qu'Appelle, Saskatchewan. S0G 1S0

On 3 September 1985 Kay and I were heading for Madge Lake in Duck Mountain Provincial Park for a few days camping. Approximately 1 km south of the Government weigh scales on Highway 10 south of Yorkton, a large dark bird crossed the highway just ahead of us. We had only a few seconds to observe it as the highway was busy and it is a bit hazardous to pull to the shoulder and stop while towing a trailer.

We had a puzzle to figure out; however, thanks to our good friend, neighbor and well known birder, Manley Callin, we have learned to look for certain aspects of birds, which served us well this time. We decided it was a heron, but which one? It was certainly not a Great Blue. We put our decisions on hold until we had set up camp.

Earlier in the year, 28 April, we had two occasions to view our first Black-crowned Night-Heron while canoeing in a creek bed off Blue Bill Bay (Echo Lake). The similarities of shape and size might indicate this bird we had seen to be the same species, however we ruled this out because of the dark grey underside. We had no view of the bird's crest as it was overhead. We did note a black mask with some white in it, the sharp, stout bill and the trailing legs. We checked our Robbins' field guide and were baffled as the map did not indicate that the bird we had selected would be this far north. We then checked Manley's contribution to *Birds of the Qu'Appelle Valley* and were encouraged that we were probably correct. We had seen a Yellow-crowned Night-Heron.

On our return to Fort Qu'Appelle 7 September, I saw the heron again from a greater distance in the same area. It land-

ed next to a dugout east of Highway 10. Since a number of dugouts are now stocked with trout, it is likely that this was a favorite feeding area.

We related our observations to Manley when we returned home. To our relief he agreed that it was a sighting of note as it is uncommon to rare in Saskatchewan and in his judgement could be none other than a Yellow-crowned Night-Heron.

GREAT GRAY OWL NAMED MANITOBA'S BIRD EMBLEM

Manitoba has become the fifth province to name a provincial bird emblem. The others are the Great Horned Owl of Alberta, the Sharp-tailed Grouse of Saskatchewan, the Black-capped Chickadee of New Brunswick and the Blue Jay of Prince Edward Island.

From 88 species nominated the Great Gray Owl was chosen. This owl is given as number 4 on the American Birding Association's list of 50 birds which birdwatchers want to see. In Manitoba more Great Gray Owls have been sighted and banded than anywhere else in the world.

Runners up included Western Meadowlark, American Robin, Common Loon, Canada Goose, Red-winged Blackbird and Ruby-throated Hummingbird.

The Wildlife Conservation Awards Committee which did much of the work towards the selection of the bird emblem consisted of outdoor writers Mel Dagg and David Hatch, Art Allen representing the Manitoba Wildlife Federation, Joyce Hart representing the Manitoba Naturalists Society, Bob Wrigley representing the Manitoba Museum of Man and Nature, and Ted Muir representing the Wildlife Branch — *Information Services*

WILDLIFE OBSERVATIONS ALONG SASKATCHEWAN'S SOURIS RIVER 1978-1980

DONALD A. WEIDL, Box 607, Birch Hills, Saskatchewan. S0J 0G0

Few residents of Saskatchewan would consider the Saskatchewan portion of the Souris River a wildlife paradise, much less a potential river for canoeing. The author's opinion was definitely changed during three spring canoe trips along the Souris River in 1978, 1979 and 1980. With the provincial government's proposal to build the Rafterty Dam on the Souris River, the author felt it was important to document the wildlife observed during these canoe trips.

The headwaters of the Souris River are in the Weyburn - Colgate - Goodwater area, with several small tributaries converging to form the main river channel. The river flows east through Estevan, swings south to Minot, North Dakota, and then loops into Manitoba, joining the Assiniboine River southeast of Brandon. Most of the valley is used for grazing or other agricultural purposes. The valley varies from a depth of approximately 15 m west of Estevan to 40 m east of Estevan. The valley width varies from 900 to 1690 m.

The banks of the section of the river canoed are covered with dense vegetation, the trees in some areas forming a closed-in canopy. Eastern Cottonwood (*Populus deltoides*), Manitoba Maple (*Acer negundo*) and Trembling Aspen (*Populus tremuloides*) are the major tree species.

The three canoe trips were along a stretch of the Souris River between Highway #39 and #9 (Fig. 1). All of the excursions were one-day spring or early summer river trips: 20 May 1978, 30 June 1979 and 17 May 1980. The length of the river covered varied from 44.0 km in 1978 to 20.25 km in 1979 and 1980. Fauna observed was recorded

and photographed when possible. The author was accompanied by George Anderson on the 1978 trip, George Anderson, Pearl Arlt and Ron Jensen in 1979 and Doug Boivin, Terry Toews and Barb Weidl in 1980.

A total of 87 bird species was identified during the three outings. Table 1 gives the species observed each year. Highlights include a pair of Wood Ducks, observed each year. A dead Golden Eagle was found on the river bank in 1980. Other interesting species were as follows: Ring-necked Pheasant, Belted Kingfisher, Northern Rough-winged Swallow, Black-and-white Warbler, Yellow-breasted Chat, Rose-breasted Grosbeak and Fox Sparrow. It should be noted that some of these species were "transients" and do not normally breed in this area.

The abundance of mammals observed along the river was a photographer's dream. Beaver, Mink, weasel, Raccoon and White-tailed Deer were observed and photographed. A total of 34 White-tailed Deer was observed throughout the day during the 1978 trip. Fox Squirrels were also sighted during all three outings; four of these shy squirrels were observed in 1978 with 8 and 9 respectively in 1979 and 1980. The identification was made using the characteristics of size found in Burt, and pelage given by Collins.^{1 2}

The highlight of all three outings was the opportunity to observe and photograph Western Painted (*Chrysemys picta belli*) and Common Snapping (*Chelydra serpentina serpentina*) turtles. A total of 202 Western Painted Turtles was observed in 1978, with

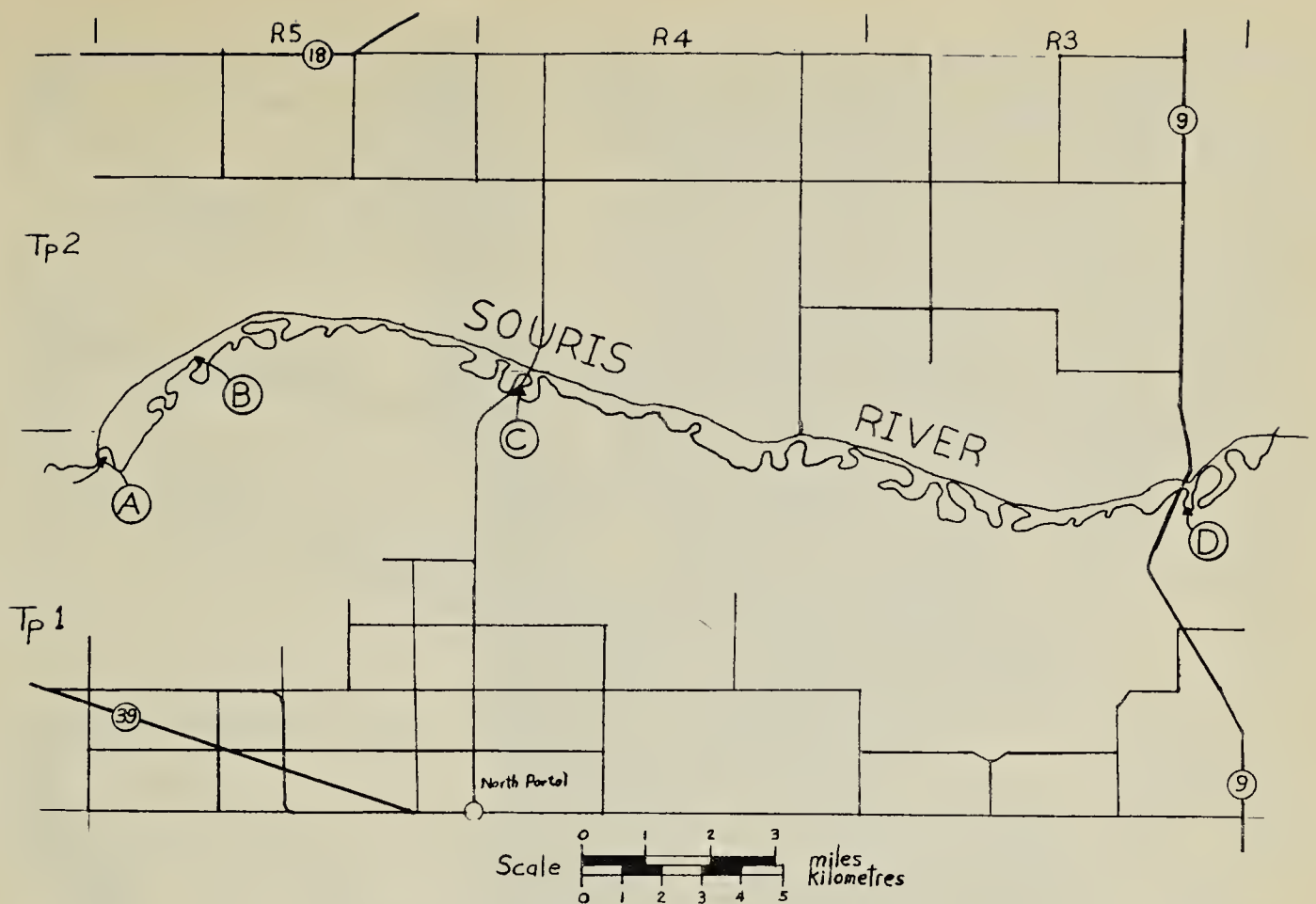


Figure 1. The areas of the Souris River covered by the canoe trips: B-D, 20 May 1978; A-C, 30 June 1979 and 17 May 1980.

15 in 1979 and 131 in 1980. In both 1978 and 1980 there were five snapping turtles observed, with only two in 1979.

The Common Snapping Turtle is the larger and by some standards the uglier of the two species of turtle that occur in Saskatchewan. Its general colour is a muddy brown without stripes, spots or other markings. The head is massive and the neck long. The tail is relatively long for a turtle and is studded with keels, reminiscent of restorations of some of the ancient armoured dinosaurs. A large adult may weigh nearly 14 kg with a shell length of 30-47 cm.³ Several of the turtles observed during these outings were estimated to be at least this size. The snapping turtle is definitely one of Saskatchewan's most interesting species of reptiles and one that most residents will not have an opportunity to see.

The prehistoric appearance and large size of the snapping turtles was something to make one's mouth drop open. These turtles

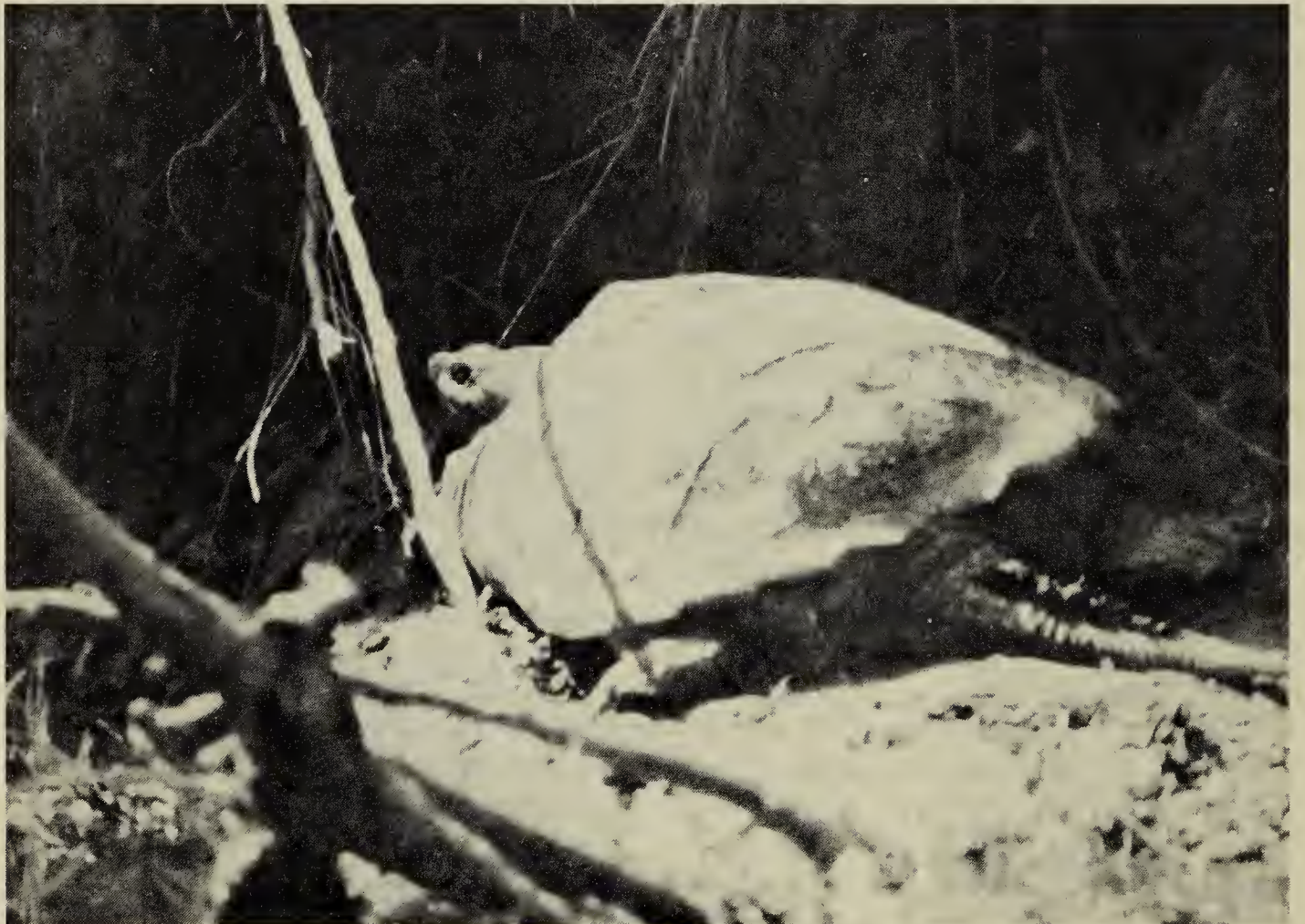
were very shy and were only observed for a few seconds before they crawled off the bank into the murky water of the Souris River. After several minutes of sitting patiently in the canoes, we would often see the turtle slowly emerge with only its nostrils breaking the surface of the water. On one occasion after a long wait, a turtle's snout emerged within a few feet of the bow of one of the canoes and noisily expelled air and water before submerging again. The result was, in the bow of the canoe, a very startled person who had not seen the turtle emerge.

It should be noted that water levels in certain parts of the Souris River are often quite low and not sufficient for canoeing. Low water levels 17 May 1980 resulted in some time spent dragging canoes over deadfalls and shallow parts of the river, a tiresome and frustrating experience. The potential for observing wildlife, however, far outweighs these hardships. Little is known about this unique area of Saskatchewan and a visit or canoe trip is highly recommended.



Fox Squirrel on Souris River in 1979

George Anderson



Common Snapping Turtle on Souris River

George Anderson

Table 1. AVIAN OBSERVATIONS ALONG THE SOURIS RIVER

<i>Bird species</i>	<i>20 May 1978</i>	<i>30 June 1979</i>	<i>17 May 1980</i>
Eared Grebe		x	
Great Blue Heron	x		
Black-crowned Night-Heron	x		
Canada Goose	x		
Mallard	x	x	x
Gadwall	x		x
Northern Pintail	x		x
Green-winged Teal	x		
Blue-winged Teal	x	x	x
American Wigeon	x	x	x
Northern Shoveler	x		
Wood Duck	x	x	x
Northern Goshawk	?		
Cooper's Hawk		x	
Red-tailed Hawk	x	x	
Swainson's Hawk	x		x
Golden Eagle		x	
Northern Harrier		x	x
Ring-necked Pheasant	x	x	x
Sora			x
Killdeer	x	x	x
Upland Sandpiper	x		
Spotted Sandpiper	x	x	x
Solitary Sandpiper		x	
Willet	x		x
Marbled Godwit	x		
Franklin's Gull			x
Black Tern	x	x	
Rock Dove	x		x
Mourning Dove	x	x	x
Great Horned Owl	x	x	x
Burrowing Owl	x		
Common Nighthawk	x		
Belted Kingfisher	x	x	x
Northern Flicker	x	x	x
Hairy Woodpecker	x		x
Downy Woodpecker	x	x	
Eastern Kingbird	x	x	x
Western Kingbird	x	x	x
Great Crested Flycatcher		x	
Eastern Phoebe		x	
Least Flycatcher	x	x	x
Western Wood-Pewee		x	
Horned Lark	x		x
Tree Swallow	x	x	x
Bank Swallow	x	x	
Northern Rough-winged Swallow	x	x	x
Barn Swallow	x	x	x
Cliff Swallow	x	x	x
Blue Jay		x	x
Black-billed Magpie	x	x	x
American Crow		x	
Black-capped Chickadee	x	x	

Table 1. (continued)

<i>Bird Species</i>	<i>20 May 1978</i>	<i>30 June 1979</i>	<i>17 May 1980</i>
House Wren	x	x	x
Gray Catbird	x	x	x
Brown Thrasher	x	x	x
American Robin	x	x	x
Veery	x	x	
Sprague's Pipit	x		
Cedar Waxwing	x	x	
Red-eyed Vireo	x	x	
Warbling Vireo	x	x	
Black-and-white Warbler	x		x
Yellow Warbler	x	x	x
Yellow-rumped Warbler	x		
Palm Warbler			x
Northern Waterthrush	x		
Common Yellowthroat		x	
Yellow-breasted Chat		x	
American Redstart	x	x	
Rose-breasted Grosbeak	x	x	x
Rufous-sided Towhee	x	x	x
Baird's Sparrow	x		
Vesper Sparrow		x	x
Chipping Sparrow			x
Clay-colored Sparrow	x	x	x
White-crowned Sparrow			x
Fox Sparrow		x	
Song Sparrow	x	x	x
Bobolink	x		x
Western Meadowlark	x		x
Red-winged Blackbird	x	x	x
Northern Oriole	x	x	
Brewer's Blackbird		x	x
Common Grackle	x	x	x
Brown-headed Cowbird	x	x	x
American Goldfinch	x	x	x
House Sparrow	x	x	x
TOTAL # SPECIES	66 + 1?	56	56
Total number of species seen in the three years	87 + 1?		

Acknowledgements

The author would like to thank George Anderson for supplying the photographs of Common Snapping Turtle and Fox Squirrel accompanying this article. Also thanks to Keith Roney for positively identifying the photographs of the Fox Squirrels.

² COLLINS, H.H. Jr. 1981 Harper and Row's complete field guide to North American wildlife. Eastern Edition. Harper & Row, New York.

³ SASKATCHEWAN DEPARTMENT OF NATURAL RESOURCES n.d. The resource reader.

¹ BURT, W.H., and R.P. GROSSENHEIDER 1964 A field guide to the mammals. 2nd Edition. Houghton Mifflin Co., Boston.

YOUNG MUSKRATS TRANSPORTED UNDERWATER BY NURSING MOTHER

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In 1985 the Science Department of the Dauphin Regional Comprehensive Secondary School conducted its spring Biology field trip to Riding Mountain National Park on 27 May. In the early afternoon the author and a class of 30 students emerged from spruce - aspen forest and proceeded eastward along the top of an old Beaver dam which still held a sizable impoundment of water, the level of which was about 0.75 m below the top of the dam.

The group was engaged in identifying aquatic invertebrates along the dam when a Muskrat swam parallel to the dam in an easterly direction 3 m out and about 0.5 m below the surface. As we watched we were surprised to see at least four young attached to the female's inguinal teats by their mouths and thus being transported through the mirror-smooth, transparent water. The young, the body length of which appeared to be about 10 cm, were located between the well-spread, kicking hind legs of the female, neatly positioned in a two-above-two arrangement and being dragged along in 1.2 m deep water. They were largely covered by a coarse, sooty hair which they have by the fifth day after birth. By the 14th to 16th days, when the eyes open this coat has been replaced by a finer, grey one.¹ The pinkish-white plantar surfaces of the hind feet of the young were easily observed. The legs were not seen to contribute to the locomotion in any way. No air bubbles were released during the time of observation, as these young muskrats instinctively held thier breath. According to Banfield the young are weaned between the 21st and 28th days after birth.¹

When the family was first noticed it was located in the deepest pool behind the dam, then traveled about 7 m into

shallower water whereupon the female gave a powerful kick, turned and plunged downward into a cloud of loose organic debris and sparse bottom vegetation. Approximately 1 min. later she reappeared swimming west from where the family had disappeared. Only three young could be seen attached to the female's teats. The family moved toward the west end of the dam along the same route which had been followed previously and at about the same depth. The family disappeared into what appeared to be a tunnel which no doubt led to the den in the dam. The second observation of the muskrat family covered about 14 m and took about 18-20 seconds. The bottom of the impoundment where the female had disappeared in the initial sighting was examined but no discernible tunnel or hole could be found although when last seen the female was angling toward the dam.

The absence of the Muskrats for about 1 min. between the end of the initial sighting and the reappearance raises the question of their whereabouts during this time. If the female went to another den in the dam, did the young retain their hold on the teats of did they release it and then begin nursing again? Did the students moving about on the dam cause a repeat of the whole procedure? Did the family actually remain underwater for the duration of 1 min. before proceeding back to the original den? What happened to the apparently missing single young? If it released its hold in open water it probably would have risen to the surface. Possibly it was dislodged in a tunnel and drowned. If the female was flushed from a second den, it may have been left behind. If so, would the female retrieve it?

Inquiries were made as to the possible uniqueness of this observation. Biologists, conservation officers, naturalists and trappers of considerable experience were consulted, but none had ever even heard of such a case. Dr. Robert Wrigley, Curator of Birds and Mammals and Director of the Manitoba Museum of Man and Nature similarly stated that he had never heard of such an observation (pers. comm., 1985). He noted however, that terrestrial nursing rodents when suddenly alarmed will rush off with the young dangling from the teats. I once observed a Deer Mouse drag several young through the grass after I lifted a board under which the female had been nursing the young in their nest. No doubt this nursing Muskrat was suddenly alarmed as the students walked out onto the Beaver dam.

Wrigley pointed out that the procedure seems to have adaptive value in removing the young from a dangerous situation. This of course, would be particularly true if the female had a safe place or at least some

cover to which the young could be dragged. In this situation, involving a semi-aquatic rodent, the survival value might be questioned. If the fleeing, nursing female was reacting to a real predator attempting to gain access to the den, the response probably would be advantageous despite the fact that, in this case, she may have lost one young. On the other hand, the fact that one young may have been lost due to no real danger suggests that this response may not always be adaptive, such as in this unnatural instance.

Acknowledgements

I would like to thank the following people for responding to my inquiries concerning possible similar observations and remarks: Ray Cooley, Robert Nero, Cathy Newcastle, John E. Walley and Robert Wrigley.

¹ BANFIELD, A.W.F. 1974 The mammals of Canada. University of Toronto Press, Toronto.



Muskrat

Juhachi Asai



Beaver

F.A. Switzer

BEAVER SWIMS UP WATERFALL

COLLEEN GERWING, 3 - 510 11th Street East, Saskatoon, Saskatchewan. S7N 0G2

At dusk on a day in the third weekend in May I was paddling alone on a lake in northern Saskatchewan. I approached a break in a Beaver dam and saw what looked like a Muskrat hydroplaning towards me. I was surprised at how close it came to the canoe, but it gave me a chance to see that it was a fish that had come up the little waterfalls created by the break. The break in the dam was about 15 in. across; water dropped about 20 in. into a pool below. This pool was held by a rough secondary dam which fed a moderately moving creek. I halted by the dam and watched another fish try five times before making it from stream to lake.

For a long time nothing happened, until a Great Blue Heron hurtled into a nearby

spruce. I was distracted from the heron by a variety of ducks and a small Beaver which seemed to resent my presence. They all disappeared and I focused back on the heron. Again the Beaver came nearby but was quickly frightened off by the slightest movement. Just as the heron flew away I heard some gurgling and plopping at the little falls. I looked there just in time to see this same Beaver swimming upstream just as the fish had done. It had to struggle, but made it up the first time, then swam away in a hurry, head above water.

I have never heard of Beaver travelling up very strong currents or falls, and I was very surprised that this one had taken the chance when it was aware of my close presence. At the end of the dam there was a short well-used overland route it could have taken, much farther away from me.

Beaver are timid in the wild while also displaying curiosity and mischief. Perhaps this yearling had just that extra sense of adventure.

BIRDS OF NAHANNI NATIONAL PARK, NORTHWEST TERRITORIES

GEORGE W. SCOTTER, LUDWIG N. CARBYN, WAYNE P. NEILY and J. DAVID HENRY 1985 Special Publication No. 15 of the Saskatchewan Natural History Society, Box 1121, Regina, Saskatchewan S4P 3B4 74 pp. Paper \$7.00

Canadians have long associated the Nahanni region of the Northwest Territories with adventure, remoteness and mystery. Legends of the Headless Valley, tropical forests and strange goings-on continue to draw visitors to this area now protected as a National Park. Sinister names like Deadmen Valley, Headless Creek and Funeral Range remind us of its legendary reputation, yet others such as Prairie Creek, Rabbitkettle Hotsprings and Caribou Range offer hints of an area rich in natural history.

Nahanni National Park is a long, relatively narrow strip of land along the Flat and Lower South Nahanni rivers in the southwestern part of the Northwest Territories near the Yukon border. It totals some 4760 km² of spectacularly rugged mountains, canyons and valleys. Deciduous vegetation in the flat fertile river valleys, coniferous forests on the mountain slopes, alpine tundra and barren glaciated rock peaks occur within the park. Extensive marsh lands, several hotsprings, hoodoos, sand blow outs and limestone karst formations add to the wide diversity of habitats. It is perhaps not surprising that the park's bird life is correspondingly varied.

This special publication of the SNHS, the 15th in the series, presents accounts of all

species of birds recorded in Nahanni National Park. A total of 170 species has been found and it is expected that this could easily rise to about 200. This compares favourably with Canada's more southern parks in the boreal forest and Rocky Mountain regions: Prince Albert (227), Riding Mountain (233), Waterton Lakes (249), Banff and Jasper combined (281), Yoho (206) and Kootenay (179).

The authors conducted field investigations in the park for several years as part of overall resource inventory studies after the park was established in 1972. Results of these studies and other published and unpublished observations are presented. An interesting and useful description of the study area begins the publication; vegetation found in the six main study sites is described in detail. Several black-and-white photographs and a key map included in this and later sections are most helpful in assisting the reader to become familiar with the habitats found in the park. Unfortunately, one photo (Fig. 5) was cropped excessively at the bottom. Short sections on climate and the history of bird observation in and adjacent to the park, follow. A methods section describes the two types of bird surveys conducted in selected areas (one to determine relative abundance, another to determine habitat preference) and the treatment and terminology used in the annotated bird list. Readers will find that the terms for frequency of occurrence (common, uncommon, rare) are defined differently for the abundance surveys and the annotated list.

The examination of bird-habitat relationships is a very valuable part of this book. The relative abundance of 83 species at two valley sites shows a high diversity of species with few (only 5) considered common.

Notable is the variety and density of thrushes - six species including Townsend's Solitaire, Gray-cheeked and Varied thrushes occurred at one valley site. The report of the occurrence of 37 species in nine habitat types at one site in 1976, and 23 species in five habitat types at a second site in 1977 will be of use in many ways to the amateur and professional bird student alike. Similar information is rarely available to the public except in more technical publications which are often inaccessible. The authors have used bird sightings (presence or absence) rather than the actual number of birds observed to determine these habitat use values so true densities cannot be calculated for a species. The importance of flocking species like siskins and crossbills in the park's avian community is de-emphasised with this treatment. The group, *Empidonax* flycatchers, is referred to in error as 'Empidonax flycatcher' in Table 2 and the text on page 22, but correctly in Table 3.

The annotated list makes up the largest section of the book (31 pp.) and gives details on the seasonal status, breeding status and frequency of occurrence of all 170 species. The most complete details are provided for those species which are of special interest, including those observed four or fewer times in the park. That this publication is a major contribution to our knowledge of birds in this region is evidenced by the large amount of new information on breeding status: confirmed range extensions for 10 species and strongly suggested extensions for another 6 species. Future visitors to the park can add to this work by looking for nests of another 25 species recorded in the breeding season, and still others expected to occur. The drawings by A.R. Smith, particularly the White-winged Crossbill on the cover, are an attractive addition to the book.

Following a literature cited section is a list of articles, books, films and maps which can be used as further sources of information on Nahanni Park. Comments on how to get to the park are given on page 16.

A thoughtful inclusion at the end of the book is the checklist of birds. Each species has a three part status code which is a summary of the material in the annotated list - a handy feature for quick reference in the field. On the inside front cover is a map of the park and surrounding area. This is the ideal spot for such a map.

Few of our national parks are fortunate enough to have such a comprehensive, up to date, error-free and readily available book on the local bird life. The authors and all those who contributed to the knowledge of the birds of Nahanni National Park should be congratulated on a most useful and attractive publication. Every birder visiting Nahanni should bring along a copy of this book together with binoculars and a large bottle of insect repellent. — Reviewed by *Philip S. Taylor*, 1714 Prince of Wales Avenue, Saskatoon, Saskatchewan. S7K 3E5

THE BALD EAGLE IN CANADA

Proceedings of Bald Eagle Days, 1983.

Edited by JON M. GERRARD and TERRANCE N. INGRAM 1985 White Horse Plains Publishers, Headingley, Manitoba. 272 pp. illus. \$20.00.

Since Charles Broley was the first to suggest that DDT might be implicated in the drastic reduction in Bald Eagle nesting success throughout eastern North America in the 1950s, and since he banded 1200 nestling Bald Eagles, this volume is dedicated to him. There are delightful vignettes about Broley's days in Manitoba, Florida and Ontario, by Ardythe McMaster, Doris Mager and Gerry McKeating, respectively.

Nine of the papers are status reports for various parts of Canada. Gerrard estimates

that there are over 10,000 Bald Eagles in Saskatchewan each summer and that they raise about 2500 young each year.

Eight of the remaining 24 papers concern Saskatchewan. Bortolotti, the Gerrards and Whitfield report that regular climbs of eagle nest trees at Besnard Lake had no detrimental effect on nesting success. They use permanent spikes, 25 to 30 cm long, hammered into each tree to form a ladder to allow quick visits. Barber, Stelfox and Brewster tell how important rapids are to the unusually high density of nesting Bald Eagles along the Churchill River; 36% of nests are within 0.8 km of rapids. Bald Eagles commonly nest near the lake or river shore and a boat census will ascertain most nesting sites. In Saskatchewan there is a strong correlation between the number of eagles nesting at a given lake and the commercial fish catch there, perhaps because fish left on the ice in spring provide food for the nesting eagles long before the lake ice thaws. Adult eagles moult throughout the nesting season and into the autumn.

Nijssen tells how an adult female Bald Eagle was trapped on its breeding territory at Besnard Lake in September 1982, and a radio transmitter attached to the tail feathers. It remained near its nesting area until 11 November when the lake was nearly completely frozen and a cold front passed through. It flew south for just over an hour that day and for over 2 hours the next day, reaching Pear Lake, 100 km south of its nest area. On 13 November it travelled to the Smoothstone River where there was still some open water. On 15 November it moved to the north end of Delaronde Lake. Another cold front passed through 16 November and the eagle started flying at 11:30 a.m., eluding further aerial searches.

At Besnard Lake, after the building of an access road and the construction of four tourist access sites, there was a drastic decrease in Bald Eagle breeding within 4 km of these sites. For management, it is recommended that no disturbance of any kind be allowed within 200 m of a Bald Eagle or

Osprey nest, with a further 800 m protected area between 1 March and 1 September. Such an area in Ontario is termed a Modified Management Area. — Reviewed by *C. Stuart Houston*, 863 University Drive, Saskatoon, Saskatchewan. S7N 0J8

BIOLOGY AND MANAGEMENT OF BALD EAGLES

Edited by DAVID M. BIRD, NORMAN R. SEYMOUR and J.M. GERRARD 1983 Harpell Press, Ste. Anne de Bellevue, Quebec. 325 pp. \$18.00.

This volume, with 42 papers and 10 abstracts, reports the results of an International Conference held in Montreal in late October 1981, in conjunction with the annual meeting of the Raptor Research Foundation.

The Bald Eagle and the Osprey began to receive attention rather belatedly, after their numbers had decreased drastically throughout Eastern North America. Together with the Peregrine Falcon, these species offered conclusive evidence that DDT and its derivatives caused egg-shell thinning and greatly reduced breeding success. More important, the world began to look at these birds as sensitive indicators of the health of our environment.

It seems we have turned the ecological corner, at least temporarily, for most of these papers describe healthy and increasing numbers of both Ospreys and Bald Eagles, and promising methods of reintroducing them into former breeding areas. In central and western regions of interior North America, Bald Eagles have probably doubled in the last 25 years. Jon Gerrard estimates that there are now 48,000 Bald Eagles in British Columbia and Alaska and another 22,000 in the remainder of the continent. Wintering populations in places like Ontario bottomed out about 1970, but have increased dramatically since.

The construction of locks, dams and reservoirs and the creation of wildlife refuges have been beneficial to wintering Bald Eagles, and introduced Kokanee Salmon have provided a new food source in North-western Montana.

Gerrard, Gerrard, Bortolotti and Whitfield present a 14-year study of the eagles at Besnard Lake, Saskatchewan. The average success of occupied breeding areas was 73% and the average number of young per occupied breeding area was 1.7. Approximately 10% of the nests were lost each year.

Veterinarians at the University of Minnesota have been quite successful in rehabilitating injured and diseased Bald Eagles. Of 52 Eagles caught in steel-jawed animal traps, 21 were rehabilitated and released (44%), while of 47 brought in with less severe problems, 37% were released into the wild. The cost of such care was several thousand dollars per eagle.

Technology plays a large role in modern studies. Some Bald Eagles carry radio transmitters. An investigator at Woods Hole, Massachusetts has an ingenious scale whereby adult Ospreys are weighed whenever they perch above their nest.

There are now about 8000 pairs of nesting Ospreys in the mainland United States. They have shown a consistent pattern of improved productivity since about 1970, except in southern Florida where there now may be insufficient food for them.

In Nova Scotia, Ospreys were 20% more successful when they nested on utility poles than when they nested in natural trees. In Florida there was less egg loss at artificial platforms, resulting in about twice as many young per active nest when platforms were used. This was felt to be due to less susceptibility to wind damage and also to greater security from ground predators.

The book also provides articles on

population trends and management of the White-tailed Eagle and of the Osprey in Europe.

This volume demonstrates the intense interest in eagles and ospreys. It also demonstrates that, through application of biological principles, coupled with increased public awareness, we are winning some conservation battles. — Reviewed by *C. Stuart Houston*, 863 University Drive, Saskatoon, Saskatchewan. S7N 0J8

THE ATLAS OF BREEDING BIRDS OF VERMONT

Editors SARAH B. LAUGHLIN and DOUGLAS P. KIBBE 1985 Published for Vermont Institute of Natural Science by University Press of New England, Hanover, New Hampshire. 478 pp. \$45.00 U.S..

This breeding bird atlas covers 195 species reported as breeding in the state of Vermont. There are 179 two-page species accounts accompanied by a distribution map and a pen-and-ink drawing of each bird. Vinyl overlays accompany the description of the area. The text contains details on habitat, foods, migratory patterns, breeding biology and other bits of bird lore. This type of book provides a baseline from which changes in bird populations can be studied.

LETTERS

GRASSHOPPERS

9:30 am Friday 9 August on the McKague Farm, Tribune. It is cloudy with misting rain, temperature 52°F. The grasshoppers are thick on the stems of shrubs and trees where they climbed the night before to escape the cold.

This morning being extra cold, they are still there, slow to move, making them easy prey for the birds.

Robins stuff as many as four in their beak before flying off to the nest of young. Small birds have a more difficult time. Wrens segment the insects before devouring all but the wings.

One female Northern Oriole has perfected a much better way of dining on the large insects. We watched from the window as the oriole flew to a Spiraea shrub. The bush, about three feet in height, was only sticks and stems with the odd leaf on top. The bird advanced through the shrub about 10 in. above ground. After catching the insect in its beak the bird placed it under one foot on the branch and proceeded to pull off and eat legs, abdomen and head, leaving the wings. This was done three times and on the fourth time the bird dropped the grasshopper on the ground. Flying down to retrieve its prey the bird pecked at the insect a few times, unable to dislodge any part. The bird then gathered the insect in its beak and flew to the nearest branch, again placing it under one foot to hold it in place, and began to eat its prize as before piece by piece.

Grasshopper, grasshoppers and more grasshoppers, one hundred or more to the square metre. They have eaten my

vegetable garden, my peonies, roses, petunias, marigolds, cotoneaster, lilacs, spiraea, caragana, the grass and last but not least the grain. There are few leaves on the maple, elm, ash and poplar. The insects don't seem to like the juniper or cedar but chew needles and bark on the spruce and can easily kill one under three feet in height. I lost five last year and will probably lose more this year.

What do you do with the pesky insects? 'Spray them!' someone says. There is a whole host of insecticides including Furadan, Lorsban, Desis, Cygon, Sevin and Malathion, to choose from. Some are contact and some residual lasting up to fourteen days. These insecticides are very toxic to man, especially Furadan and Lorsban. You must cover up with plastic rain coat and hat and wear plastic gloves and a mask before spraying and then dispose of all garments very carefully afterward. For edible plants the waiting time is 7 to 60 days (grain) for different brands.

Dogs have dropped in thirty feet when following a sprayer and birds have dropped dead after sitting on the boom of the sprayer for one minute. There are no bees, but then there are no flowers either. But what of the beneficial insects, have we eliminated them as well? And what about the birds? How many have we killed? Will there be any after-effects from birds eating insects that have eaten residual insecticides? Does anyone have the answer? — *Ruth McKague*, Box 85, Tribune, Saskatchewan S0C 2M0.

PESTICIDE SPRAYING

At our farm near Bromhead, Saskatchewan, birds had a difficult summer. Many nests failed around the third week in June (robins, shrike, thrashers, kingbirds, orioles, etc.) and all the birds displayed unusual behaviour around that time. Adult pairs attacked one another, thrashers attacked robins, robins kingbirds, orioles anything and vice versa -- all over the yard all kinds of birds attacked all other kinds of birds; tiny birds attacked big birds. All of this coincided with the time when very heavy aerial spraying for grasshoppers was taking place all around our farm. Although we did not spray the effects of the spraying drifted to our farm as I had to undergo treatment for the effects of chemical poisoning. I think the birds may have been poisoned too!

All bird populations in our yard were down this year, some diastrously so. Hardly any warblers: yellow, yellowthroat, no ovenbirds or any others at all. No flickers, Song Sparrows, and so many failed nests in June.

Still, we have a huge bird population compared to other farm yards or

Bromhead. We definitely attribute it to the heavy and continuous summer-long grasshopper spraying this year and last year. People have sprayed their very house yards several times, with lethal poisons such as Sevin, Furadan and worse! Crop spraying has been carried on every day and only ceased in our neighbourhood in the third week of July, when the spray pilot crashed his plane. People have been made ill and some, one a young boy, have been killed. The local plane sprayers were "careful" as far as spraying can be, but the whole countryside has been polluted all summer long. People are reporting to me now that they don't even have common birds, such as wrens, any more. We drive school bus and we could tell by June that other yards did not have any birds left. I used to know what birds lived in all the yards on my route, but this year there was nothing much to see. We don't spray and we have birds even though their behavior is suspect.

This is our seventh summer of drought and the birds had survived it fairly well, but with the grasshopper poisoning they have suddenly disappeared. We think it is quite clear why the disaster has occurred. — *Carol Bjorklund*, Box 32, Bromhead, Saskatchewan S0C 0N0.

MOULTING OF EARED GREBES AND WILSON'S PHALAROPES ON SALINE LAKES

Dr. Joseph R. Jehl is studying the incredible concentrations of moulting Wilson's Phalaropes (from 20 June to end of July; peak at 100,000 individuals) and Eared Grebes (from end of July through September; peaking at 800,000 individuals) at Mono Lake, California. Although they rest far out in the lake, grebe primaries and sometimes phalarope feathers may be encountered along the shoreline.

Jehl postulates that similar, though perhaps smaller concentrations must occur on other saline lakes. Old Wives Lake and Chaplin Lake would be good possibilities; Joe would like to visit Saskatchewan in 1986 if anyone can provide good leads as to time and place. Write Dr. Jehl at **Hubbs - Sea World Research Institute, 1700 South Shores Road, Mission Bay, San Diego, California 92109** or phone Stuart or Mary Houston in Saskatoon (306-244-0742).

SOCIETY NEWS

The usual awards were presented at the annual meeting in Regina in October. The Conservation Award was received this year by Lorne Lepp to honour him for his efforts in environmental education and conservation. He worked to protect the sand dunes of Good Spirit Lake Provincial Park through the masterplan. He was a major force in the establishment of the Elizabeth Priestly Nature Trail at York Lake, for which he developed interpretive brochures. His active promotion of the trail for school use is followed by participating in the Project Wild program this year, bringing wildlife education indoors. The crowning achievement has been the establishment of the Yorkton Ecological Park, where a ravine and marsh have been preserved within the city limits of Yorkton. Here a nature trail has been established and a fine piece of habitat has

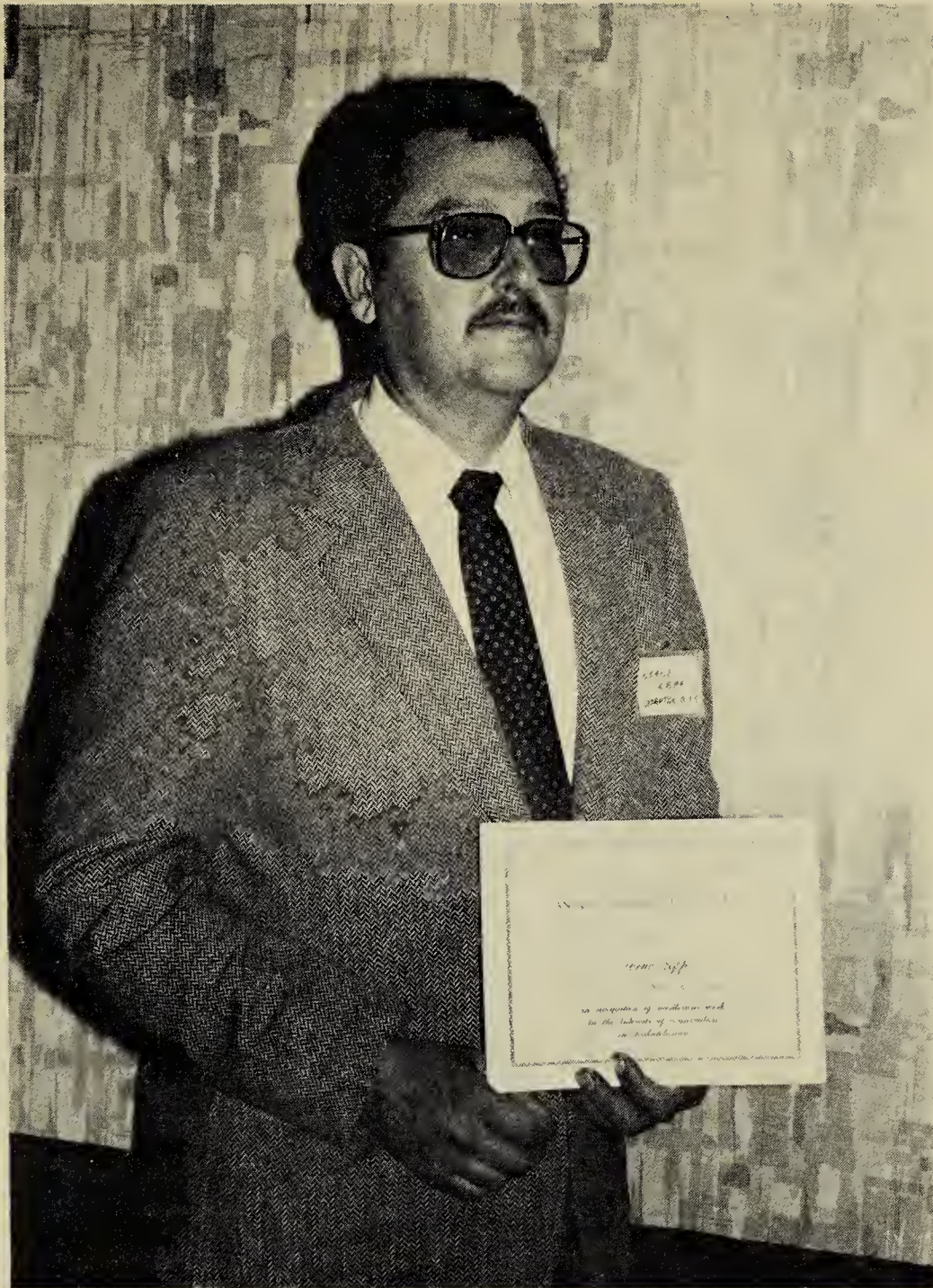
been preserved.

From the participants who showed their slides at the annual meeting Carol Bjorklund of Bromhead, Saskatchewan was chosen to receive the Larry Morgotch Award. Her series of slides depicted the story of the rescue of an owl when the nest was blown down.

The Cliff Shaw Award this year goes to Jean and George Hilton for their report of a Rufous Humminbird, which appeared in the March 1985 Blue Jay [43(1):54-55]. Their account gave a description of the field marks used to identify the bird and included behavioral characteristics. The article is an example of accurate observation of nature.



Carol Bjorklund receives the Larry Morgotch Award from W. Hjertaas Sheina Wait



Lorne Lepp, recipient of the Conservation Award Sheina Wait

SASKATCHEWAN NATURAL HISTORY SOCIETY

(Operating Statement for the year ended 30 September 1985)

INCOME:

Membership - regular	\$21,258.58	
- sustaining & patron	3,291.00	\$24,549.58
Donations - general	844.87	
Grants - Sask. Sport Trust (SST)	230.00	
Interest received	5,939.29	

Miscellaneous income-sale of BJ News	26.67		
- 1984 Whooping Crane tour	\$ 1,032.25		
- Cypress Hills Workshop	721.51		
- Cambridge Bay tour	151.35	\$ 1,931.78	
Sale of Society Publications		1,220.10	\$10,166.04
Bookshop sales	\$32,203.27		
Less cost of sales	(23,561.27)		
Gross profit	(26.8%)		\$ 8,642.00
Less costs: postage & other exp.	(4.0%)	(1,301.35)	
Less honorarium (40%)	(9.1%)	(2,936.26)	
Net bookshop profit	(13.7%)		\$ 4,404.39
TOTAL INCOME			\$39,120.01

EXPENSES:

Advertising & promotion	\$902.75		
Less grant from Sask. Sports Trust	(1,000.00)	\$ (97.25)	
Audit costs for 1984		26.95	
Bank Charges		54.89	
Computer expenses		\$ 1,839.35	
Conservation activities:			
Great Gray Owl Research	\$ 500.00		
Purchase of Wildlife Area	1,000.00		
Heritage Marsh Trust Fund	5,000.00		
Habitat Conservation Trust Fund	5,000.00		
Threatened and Endangered Species Research	4,000.00		
Special Publications	2,000.00	\$17,500.00	
Honoraria (900, 860, 450)	\$ 2,210.00		
Less grant from Sask. Sports Trust	(2,500.00)	\$ (290.00)	
Meeting expense - annual meeting	\$ 325.38		
Less grant from SST	(500.00)	\$ (174.62)	
Meeting - summer		(228.00)	
Meeting - board & other		145.20	
Membership in other organizations	125.00		
Miscellaneous office and administration		201.32	
Office Equipment		183.73	
Office Supplies and Stationery	\$ 808.78		
Less grant Sask. Sports Trust	(1,000.00)	\$ (191.22)	
Postage & Express - general		1,212.42	
Blue Jay (4 issues) - printing	\$16,364.60		
- mailing	496.33		
- photos	605.85		
- less ad.& mark. grant	(425.26)	\$17,041.52	
Blue Jay News (3 issues) - printing	\$ 2,560.68		
- mailing	\$3,108.88		
Less grant SST	(3,000.00)	\$ 108.88	
Less ad. & mark. grant	(391.42)	\$2,278.14	
Society Special Publications Cost			
Birds of Nahanni	\$3,632.00		
Less Fed. gov. grant	(4,000.00)	\$ (368.00)	
Taxonomic reminder	294.90	\$ (73.10)	
Telephone cost		\$ 834.99	
Travel (excluding Board meetings)	\$ 2,956.00		
Less grant Sask. Sports Trust	(3,000.00)	\$ (44.00)	
Wage costs	\$ 1,214.51		
Less grant Sask. Sports Trust	(3,000.00)	\$(1,785.49)	
TOTAL EXPENSES		\$38,559.83	
NET INCOME			\$ 560.18

